

NPDES Permit No. NMR04A000

Annual Report Format

**National Pollutant Discharge Elimination System Stormwater Program
MS4 Annual Report Form**



Check box if you are submitting an individual Annual Report with cooperative program elements ☒

Check box if you are submitting an individual Annual Report with individual program elements ☐

Check box if this is a new name, address, etc. ☐

I. MS4(s) Information

Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA)

Name of MS4

Jerry Lovato Executive Engineer

Name of Contact Person (First)

(Last)

(Title)

505-884-2215

jlovato@amafca.org

Telephone (including area code)

E-mail

2600 Prospect Ave. NE

Mailing Address

Albuquerque

NM

87107

City

State

ZIP code

What size population does your MS4(s) serve? 564,559 NPDES number NMR04A016

What is the reporting period for this report? (mm/dd/yyyy) From Jul 1, 2020 to Jun 30, 2021

2. Water Quality Priorities

A. Does your MS4(s) discharge to waters listed as impaired on a state 303(d) list? ☒ Yes ☐ No

B. If yes, identify each impaired water, the impairment, whether a TMDL has been approved by EPA for each, and whether the TMDL assigns a wasteload allocation to your MS4(s). Use a new line for each impairment, and attach additional pages as necessary.

Impaired Water	Impairment	Approved TMDL		TMDL assigns WLA to MS4	
Rio Grande (Isleta - Tijeras)	E. coli	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Rio Grande (Isleta - Tijeras)	DO, PCBs & Hg-Fish Consumption	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Rio Grande (Tijeras - Alameda)	DO & Temperature	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Rio Grande (Tijeras - Alameda)	PCBs & Hg-Fish Consumption	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No

2. B. Continued

Impaired Water	Impairment	Approved TMDL		TMDL assigns WLA to MS4	
Rio Grande (Tijeras - Alameda)	E. coli	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Rio Grande (Alameda - US550)	PCBs & Hg-Fish Consumption	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Rio Grande (Alameda - US550)	Gross Alpha, adjusted & PCBs	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Rio Grande (Alameda - US550)	E. coli	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

C. What specific sources contributing to the impairment(s) are you targeting in your stormwater program?

Pet waste (E. coli) within the watershed & potential low DO related to the NDC outfall.

D. Do you discharge to any high-quality waters (e.g., Tier 2, Tier 3, outstanding natural resource waters, or other state or federal designation)? ☐ Yes ☒ No

E. Are you implementing additional specific provisions to ensure their continued integrity? ☐ Yes ☐ No

3. Public Education and Public Participation

A. Is your public education program targeting specific pollutants and sources of those pollutants? ☒ Yes ☐ No

B. If yes, what are the specific sources and/or pollutants addressed by your public education program?

AMAFCA's programs target specific sources & pollutants, as required in MS4 Permit.

C. Note specific successful outcome(s) (e.g., quantified reduction in fertilizer use; NOT tasks, events, publications) fully or partially attributable to your public education program during this reporting period.

Please refer to www.keeptheriogrand.org website for documentation related to successful outcomes.

D. Do you have an advisory committee or other body comprised of the public and other stakeholders that provides regular input on your stormwater program? ☒ Yes ☐ No

4. Construction

A. Do you have an ordinance or other regulatory mechanism stipulating:

Erosion and sediment control requirements? ☒ Yes ☐ No

Other construction waste control requirements? ☒ Yes ☐ No

Requirement to submit construction plans for review? ☒ Yes ☐ No

MS4 enforcement authority? ☒ Yes ☐ No

B. Do you have written procedures for:

Reviewing construction plans? ☒ Yes ☐ No

Performing inspections? ☒ Yes ☐ No

Responding to violations? ☒ Yes ☐ No

C. Identify the number of active construction sites ≥ 1 acre in operation in your jurisdiction at any time during the reporting period.

D. How many of the sites identified in 4.C did you inspect during this reporting period?

E. Describe, on average, the frequency with which your program conducts construction site inspections.

Inspections complied with CGP & MS4 requirements for inspection frequency.

- F. Do you prioritize certain construction sites for more frequent inspections? ☐ Yes ☒ No

If Yes, based on what criteria?

- G. Identify which of the following types of enforcement actions you used during the reporting period for construction activities, indicate the number of actions, or note those for which you do not have authority:

☐ Yes Notice of violation No Authority ☒

☐ Yes Administrative fines No Authority ☒

☐ Yes Stop Work Orders No Authority ☐

☐ Yes Civil penalties No Authority ☒

☐ Yes Criminal actions No Authority ☒

☐ Yes Administrative orders No Authority ☒

☐ Yes Other

- H. Do you use an electronic tool (e.g., GIS, data base, spreadsheet) to track the locations, inspection results, and enforcement actions of active construction sites in your jurisdiction? ☒ Yes ☐ No

- I. What are the 3 most common types of violations documented during this reporting period?

- J. How often do municipal employees receive training on the construction program?

5. **Illicit Discharge Elimination**

- A. Have you completed a map of all outfalls and receiving waters of your storm sewer system? ☒ Yes ☐ No

- B. Have you completed a map of all storm drain pipes and other conveyances in the storm sewer system? ☒ Yes ☐ No

- C. Identify the number of outfalls in your storm sewer system.

- D. Do you have documented procedures, including frequency, for screening outfalls? ☒ Yes ☐ No

- E. Of the outfalls identified in 5.C, how many were screened for dry weather discharges during this reporting period?

- F. Of the outfalls identified in 5.C, how many have been screened for dry weather discharges at any time since you obtained MS4 permit coverage?

- G. What is your frequency for screening outfalls for illicit discharges? Describe any variation based on size/type.

- H. Do you have an ordinance or other regulatory mechanism that effectively prohibits illicit discharges? ☐ Yes ☒ No

- I. Do you have an ordinance or other regulatory mechanism that provides authority for you to take enforcement action and/or recover costs for addressing illicit discharges? ☐ Yes ☒ No

J. During this reporting period, how many illicit discharges/illegal connections have you discovered?

K. Of those illicit discharges/illegal connections that have been discovered or reported, how many have been eliminated?

L. How often do municipal employees receive training on the illicit discharge program?

6. **Stormwater Management for Municipal Operations**

A. Have stormwater pollution prevention plans (or an equivalent plan) been developed for:

All public parks, ball fields, other recreational facilities and other open spaces	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
All municipal construction activities, including those disturbing less than 1 acre	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
All municipal turf grass/landscape management activities	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
All municipal vehicle fueling, operation and maintenance activities	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
All municipal maintenance yards	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
All municipal waste handling and disposal areas	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

Other

B. Are stormwater inspections conducted at these facilities? ☒ Yes ☐ No

C. If Yes, at what frequency are inspections conducted?

D. List activities for which operating procedures or management practices specific to stormwater management have been developed (e.g., road repairs, catch basin cleaning).

E. Do you prioritize certain municipal activities and/or facilities for more frequent inspection? ☐ Yes ☒ No

F. If Yes, which activities and/or facilities receive most frequent inspections?

G. Do all municipal employees and contractors overseeing planning and implementation of stormwater-related activities receive comprehensive training on stormwater management? ☒ Yes ☐ No

H. If yes, do you also provide regular updates and refreshers? ☒ Yes ☐ No

I. If so, how frequently and/or under what circumstances?

7. **Long-term (Post-Construction) Stormwater Measures**

A. Do you have an ordinance or other regulatory mechanism to require:

Site plan reviews for stormwater/water quality of all new and re-development projects?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Long-term operation and maintenance of stormwater management controls?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Retrofitting to incorporate long-term stormwater management controls?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

B. If you have retrofit requirements, what are the circumstances/criteria?

C. What are your criteria for determining which new/re-development stormwater plans you will review (e.g., all projects, projects disturbing greater than one acre, etc.)?

D. Do you require water quality or quantity design standards or performance standards, either directly or by reference to a state or other standard, be met for new development and re-development? ☒ Yes ☐ No

E. Do these performance or design standards require that pre-development hydrology be met for:

Flow volumes ☐ Yes ☒ No

Peak discharge rates ☒ Yes ☐ No

Discharge frequency ☒ Yes ☐ No

Flow duration ☐ Yes ☒ No

F. Please provide the URL/reference where all post-construction stormwater management standards can be found.

<https://www.amafca.org/drainage-policy/>

G. How many development and redevelopment project plans were reviewed during the reporting period to assess impacts to water quality and receiving stream protection?

H. How many of the plans identified in 7.G were approved?

I. How many privately owned permanent stormwater management practices/facilities were inspected during the reporting period?

J. How many of the practices/facilities identified in I were found to have inadequate maintenance?

K. How long do you give operators to remedy any operation and maintenance deficiencies identified during inspections?

L. Do you have authority to take enforcement action for failure to properly operate and maintain stormwater practices/facilities? ☐ Yes ☒ No

M. How many formal enforcement actions (i.e., more than a verbal or written warning) were taken for failure to adequately operate and/or maintain stormwater management practices?

N. Do you use an electronic tool (e.g., GIS, database, spreadsheet) to track post-construction BMPs, inspections and maintenance? ☒ Yes ☐ No

O. Do all municipal departments and/or staff (as relevant) have access to this tracking system? ☒ Yes ☐ No

P. How often do municipal employees receive training on the post-construction program?

8. Program Resources

A. What was the annual expenditure to implement MS4 permit requirements this reporting period?

B. What is next year's budget for implementing the requirements of your MS4 NPDES permit?

C. This year what is/are your source(s) of funding for the stormwater program, and annual revenue (amount or percentage) derived from each?

Source: Amount \$ OR %

Source: Amount \$ OR %

Source: Amount \$ OR %

D. How many FTEs does your municipality devote to the stormwater program (specifically for implementing the stormwater program; not municipal employees with other primary responsibilities)? 1

E. Do you share program implementation responsibilities with any other entities? ☒ Yes ☐ No

Entity	Activity/Task/Responsibility	Your Oversight/Accountability Mechanism
Various	Storm Water Quality Team (SWQT)	Signed Joint Agreement
Various	Technical Advisory Group (TAG)	Signed Joint Agreement
Various	Compliance Monitoring Coop. (CMC)	Signed Joint Agreement

9. **Evaluating/Measuring Progress**

A. What indicators do you use to evaluate the overall effectiveness of your stormwater management program, how long have you been tracking them, and at what frequency? These are not measurable goals for individual management practices or tasks, but large-scale or long-term metrics for the overall program, such as macroinvertebrate community indices, measures of effective impervious cover in the watershed, indicators of in-stream hydrologic stability, etc.

Indicator <i>Example: E. coli</i>	Began Tracking (year)	Frequency	Number of Locations
	2003	Weekly April–September	20
Various (EPA approved analyte list)	2016	Qualifying events (up to 7)	3
Various/EPA approved analyte list	2014	Wet weather, annually	8
Various/EPA approved analyte list	2021	Wet weather, annually	11
Please contact AMAFCA			
for additional information			

B. What environmental quality trends have you documented over the duration of your stormwater program? Reports or summaries can be attached electronically, or provide the URL to where they may be found on the Web.

Trends and data collected by CMC & AMAFCA has been provided to NMED for additional analysis.

10. **Additional Information**

Please attach any additional information on the performance of your MS4 program, including information required in Parts I.C and III.B. If providing clarification to any of the questions on this form, please provide the question number (e.g., 2C) in your response.

Certification Statement and Signature

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

☒ Yes ☐ No

Federal regulations require this application to be signed as follows: **For a municipal, State, Federal, or other public facility:** by either a principal executive or ranking elected official.

Signature



Eric Engle

Name of Certifying Official, Title

12/01/2021

Date (mm/dd/yyyy)

**NPDES PERMIT No.
NMR04A000**

**STORMWATER MANAGEMENT
PROGRAM
(SWMP)**

**FOR
ALBUQUERQUE METROPOLITAN ARROYO
FLOOD CONTROL AUTHORITY**

JULY 1, 2021



**2600 PROSPECT AVENUE NE
ALBUQUERQUE, NM 87107
(505) 884-2215**



ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY
STORMWATER MANAGEMENT PROGRAM
(SWMP)

EFFECTIVE JULY 1, 2021

PREPARED FOR COVERAGE UNDER EPA NPDES
GENERAL PERMIT NMR04A000
MIDDLE RIO GRANDE WATERSHED BASED MUNICIPAL
SEPARATE STORM SEWER SYSTEM (MS4) PERMIT



AMAFCA
2600 PROSPECT AVENUE, NE
ALBUQUERQUE, NM 87107

TABLE OF CONTENTS

REVISIONS	II
CERTIFICATION	IV
ACRONYM AND ABBREVIATIONS LIST	V
1 INTRODUCTION.....	1
1.1 Purpose of Stormwater Management Program (SWMP)	1
1.2 Notice of Intent (NOI) to Obtain MS4 Permit Coverage	2
1.3 AMAFCA – Background and Description.....	2
1.3.1 Flood Control Channels	2
1.3.2 Dams.....	3
1.3.3 Stormwater Quality	3
1.4 Compliance with Other Laws and Regulatory Requirements	4
1.5 Legal Authority	4
2 SWMP GENERAL COMPONENTS AND REQUIREMENTS	5
2.1 Special Conditions SWMP Components	5
2.2 Control Measures SWMP Components.....	8
2.3 Monitoring SWMP Components	12
2.4 SWMP Organization.....	13
2.5 Process of SWMP Reviews.....	13
2.6 Requirements for Public Review and Comments.....	14
2.7 Process of SWMP Modifications	14
2.7.1 Permittee-Initiated Modifications.....	14
2.7.2 EPA-Required Modifications.....	15
2.7.3 Due to Modification of the MS4 Permit.....	15
2.7.4 Implementation and Augmentation of SWMP	15
3 SWMP TABLES.....	17

APPENDICES

APPENDIX A – NPDES MIDDLE RIO GRANDE WATERSHED BASED MS4 PERMIT NMR04A000
APPENDIX B – AMAFCA'S EPA APPROVAL / AUTHORIZATION FOR PERMIT COVERAGE & NOTICE OF INTENT (NOI)
APPENDIX C – AMAFCA'S FACILITIES MAP
APPENDIX D – COOPERATIVE PROGRAMS

REVISIONS

SWMP Plan Version and Date	Date Submitted to EPA	Reason for Revision (e.g., Modification, Annual Report Review and Update, etc.)	Notes
Revision 0, Dec. 1, 2015	Dec. 1, 2015	N/A - Initial Version	Initial SWMP under Permit NMR04A000
Revision 1, Dec. 1, 2016	Dec. 1, 2016	Updated with EPA NOI revisions and minor text revisions resulting from first Annual Report review	SWMP submittal required with first Annual Report under Permit NMR04A000
Revision 2, Dec. 1, 2017	Dec. 1, 2017	Updated with minor text revisions resulting from FY 2017 Annual Report review	Internal update of SWMP – minor text revisions
Revision 3, Dec. 1, 2018	Dec. 1, 2018	Updated with minor plan and goal revisions resulting from FY 2018 Annual Report review	SWMP submittal required with year four (4) Annual Report under Permit NMR04A000
Revision 4, Dec. 1, 2019	Dec. 1, 2019	Updated with plan and goal revisions resulting from FY 2019 Annual Report review	Internal update of SWMP – minor text revisions
Revision 5, July 1, 2020	July 1, 2020	Updated with change to staggered SWMP time frames relative to Annual Report schedules	Internal update of SWMP – minor text revisions

SWMP Plan Version and Date	Date Submitted to EPA	Reason for Revision (e.g., Modification, Annual Report Review and Update, etc.)	Notes
Revision 6, July 1, 2021	July 1, 2021	Updated with plan and goal revisions resulting from FY 2020 Annual Report review	Internal update of SWMP – minor text revisions

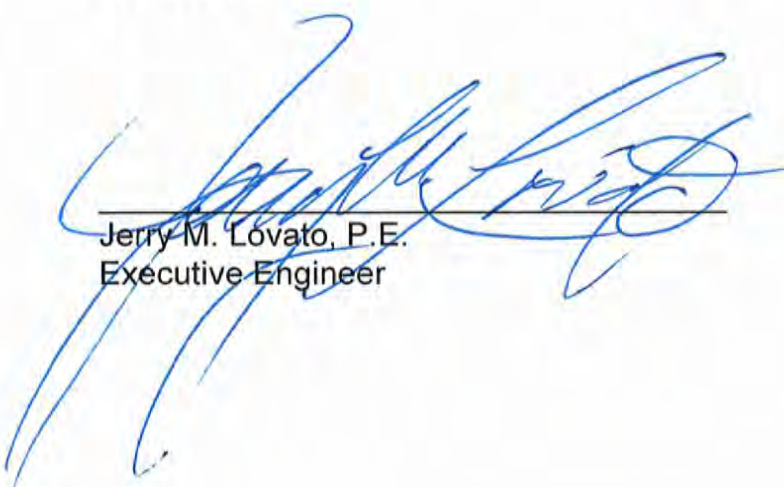
CERTIFICATION



NPDES Permit No. NMR04A000
Stormwater Management Program (SWMP)
Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

AMAFCA



Jerry M. Lovato, P.E.
Executive Engineer

7-1-2021
Date

ACRONYM AND ABBREVIATIONS LIST

ABCWUA	Albuquerque Bernalillo County Water Utility Authority
AMAFCA	Albuquerque Metropolitan Arroyo Flood Control Authority
BA	Biological Assessment
BC	Bernalillo County
BEMP	Bosque Ecosystem Monitoring Program
BMP	Best Management Practice
BO	Biological Opinion
BOD ₅	Biochemical Oxygen Demand
CFR	Code of Federal Regulations
cfs	Cubic Feet per Second
CGP	EPA NPDES Construction General Permit
CIUDAD	Ciudad Soil and Water Conservation District
CMC	Compliance Monitoring Cooperative
COA	City of Albuquerque
COD	Chemical Oxygen Demand
CWA	Clean Water Act
CY	Cubic Yard
DCIA	Directly Connected Impervious Area
DMP	Drainage Management Plan
DMR	Discharge Monitoring Report
DO	Dissolved Oxygen
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESCAFCA	Eastern Sandoval County Arroyo Flood Control Authority
FOG	Fats, Oils, and Grease
FR	Federal Register
FSP	Field Sampling Plan
FY	Fiscal Year (July 1 to June 30)
GI	Green Infrastructure
GIS	Geographic Information System
GSI	Green Stormwater Infrastructure
IA	Impervious Area

ACRONYM AND ABBREVIATIONS LIST

IDDE	Illicit Discharge Detection and Elimination
ISC	Interstate Stream Commission
KAFB	Kirtland Air Force Base
LA	Load Allocation
LID	Low Impact Development
MCM	Minimum Control Measures
ML	Monitoring Location
MRG	Middle Rio Grande
MRGCD	Middle Rio Grande Conservancy District
MRGSQT	Middle Rio Grande Stormwater Quality Team
MS4	Municipal Separate Storm Sewer Systems
MSGP	EPA NPDES Multi Sector General Permit (Industrial Activity Permit)
MST	Microbial Source Tracking
NDC	North Diversion Channel
NM	New Mexico
NMAC	New Mexico Administrative Code
NMDOT	New Mexico Department of Transportation
NMED	New Mexico Environment Department
NMSA	New Mexico Statutes Annotated
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NTP	Notice to Proceed
O&M	Operation and Maintenance
OMRRR	Operation and Maintenance Repair Replacement and Rehabilitation
OSE	Office of the State Engineer
PCB	Polychlorinated biphenyl
PDN	Paseo Del Norte Boulevard
PNM	Public Service Company of New Mexico
ppb	Parts per Billion
QAPC	Quality Assurance and Performance Control
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance and Quality Control

ACRONYM AND ABBREVIATIONS LIST

RGSM	Rio Grande Silvery Minnow
ROW	Right of Way
SDC	South Diversion Channel
SDL	Sample Detection Limit
SJD	San Jose Drain
SOP	Standard Operating Procedure
SSCAFCA	Southern Sandoval County Arroyo Flood Control Authority
SSO	Sanitary Sewer Overflow
SW	Southwest
SWMP	Stormwater Management Program
SWPPP	Stormwater Pollution Prevention Plan
SWQB	Surface Water Quality Bureau
TAG	Technical Advisory Group
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
UNM	University of New Mexico
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Service
WLA	Waste Load Allocation
WQ	Water Quality
WQS	Water Quality Standard
WQ MH	Water Quality Manhole

1 INTRODUCTION

1.1 PURPOSE OF STORMWATER MANAGEMENT PROGRAM (SWMP)

The Stormwater Management Program (SWMP) was developed in support of the requirements of the United States Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Middle Rio Grande Watershed Based Municipal Separate Storm Sewer System (MS4) Permit NMR04A000 (MS4 Permit). The MS4 Permit was issued and became effective on December 22, 2014 and was subsequently modified by EPA on April 9, 2015. The Middle Rio Grande (MRG) Watershed Based MS4 Permit entered Administrative Continuance in Dec. 2019 when EPA Region 6 did not issue a new MS4 Permit before the current MS4 Permit's expiration date. The MRG Technical Advisory Group (TAG) sent EPA a letter dated October 15, 2019 acknowledging Administrative Continuance after the expiration date of the 5-year permit term. Until a new MS4 Permit is issued, there are no wet and dry weather monitoring requirements in the Rio Grande. The SWMP, according to Part I.D.1 of the MS4 Permit, shall satisfy all requirements of this MS4 Permit, and be implemented in accordance with Section 402(p)(3)(B) of the Clean Water Act (CWA), and the Stormwater Regulations (40 CFR § 122.26 and § 122.34). The MS4 Permit is included as Appendix A of this SWMP document.

The SWMP that follows describes the actions that Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) will take to protect water quality and satisfy applicable requirements of the MS4 Permit. According to Part I.D.1 of the MS4 Permit, the SWMP will be designed to reduce the discharge of pollutants from a MS4 to the maximum extent practicable, to protect water quality (including that of downstream state or tribal waters), and to satisfy applicable surface water quality standards.

The SWMP serves to document AMAFCA's proposed plans and measurable goals, implementation schedules, and assessments associated with meeting the MS4 Permit requirements. The SWMP will be revised and modified as necessary over the course of the 5-year MS4 Permit term and during administrative continuance of the MS4 Permit. Submittal of each Annual Report and updated SWMP meets the requirements in Part I.D.6.b. The SWMP (Revision 5) summarizes the applicable MS4 Permit requirements and describes AMAFCA's plans and strategies to comply with the MS4 Permit requirements. The SWMP clearly defines, as applicable to AMAFCA and as required in Part I.D.4 of the MS4 Permit, AMAFCA's measurable goals and implementation schedule for each Control Measure.

1.2 NOTICE OF INTENT (NOI) TO OBTAIN MS4 PERMIT COVERAGE

For coverage under the MS4 Permit, AMAFCA submitted a notice of intent (NOI) as required in Part I.A.6.a to EPA Region 6 on June 19, 2015. AMAFCA is classified as a Class A Permittee, as defined in Table 1 (Part I.B.1.a) of the MS4 Permit. AMAFCA received authorization to discharge under this MS4 Permit from EPA in February 2016. The MRG Watershed Based MS4 Permit entered Administrative Continuance in Dec. 2019 when EPA Region 6 did not issue a new MS4 Permit before the current MS4 Permit's expiration date. The MRG TAG sent EPA a letter dated October 15, 2019 acknowledging Administrative Continuance after the expiration date of the 5-year permit term. The NOI and related correspondence is provided as Appendix B of this SWMP. With acceptance of AMAFCA's NOI, EPA assigned AMAFCA a Permit Tracking Number of NMR04A016.

1.3 AMAFCA – BACKGROUND AND DESCRIPTION

AMAFCA was created in 1963 by the New Mexico Legislature, (72-16-1 to 72-16-103 NMSA 1978 known as the "Arroyo Flood Control Act.") with a specific responsibility to provide flood control infrastructure to address flooding problems in the greater Albuquerque area.

AMAFCA's purpose is to prevent injury or loss of life and to eliminate or minimize property damage. AMAFCA does this by building and maintaining large critical flood control structures throughout the Albuquerque area which help alleviate flooding. The AMAFCA system is used by the City of Albuquerque (COA), the University of New Mexico (UNM), the New Mexico Department of Transportation (NMDOT), Bernalillo County, Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA), and the Village of Los Ranchos as a final conveyance of stormwater collected by their respective systems to the Rio Grande.

AMAFCA has invested approximately \$260,000,000 in infrastructure that includes 21 flood control dams, 50 smaller flood-control ponds, 77 miles of arroyo channels, 11 miles of underground conduit structures, and 10 miles of dikes and diversion structures. AMAFCA stormwater quality and debris-removal facilities annually collect an average of 50,000 cubic yards of sediment and 2,500 cubic yards of trash from stormwater before the runoff enters the Rio Grande. In addition to building infrastructure, outreach and education is an important part of AMAFCA's mission to protect life, property, and the environment.

1.3.1 FLOOD CONTROL CHANNELS

The first mission of AMAFCA was to be the local sponsor for construction of two very large federally-funded projects, the North and South Diversion Channels, which were built by the U.S. Army Corps of Engineers (USACE). The North Diversion Channel (NDC) drains from Northeast Albuquerque and can convey 44,000 cubic feet of water per second (cfs) at its outlet. The smaller South Diversion Channel (SDC) protects the Southeast Valley by intercepting flows from Southeast Albuquerque and the Tijeras Arroyo. AMAFCA is responsible for operation and maintenance of these two main flood control structures.

The North and South Diversion Channels are examples of traditional flood control channels. The NDC is a concrete-lined channel while the SDC is an earthen-lined channel. Both channels divert floodwater generated on the east side of the City to the river. There are many constructed tributary channels and storm drain systems that discharge into these two main arterial channels along the eastern side of Albuquerque.

In addition to the NDC and SDC, AMAFCA is responsible for the operation and maintenance of other channels which divert floodwater generated on the west side of the City to one of three outfalls to the Rio Grande. The Calabacillas, La Orilla, and San Antonio outfalls are largely earthen-lined systems originating from the west mesa along the western extents of Albuquerque. Construction is in progress for AMAFCA's Black Mesa Outfall and this fourth outfall for Albuquerque's west side, may be active for the effective dates of this SWMP (Rev. 5).

1.3.2 DAMS

A typical AMAFCA dam is built with a principal spillway (pipe through the embankment) and an emergency spillway. Dams and other types of detention basins collect storm flows from existing storm drain infrastructure and release it slowly to prevent downstream damage. AMAFCA dams are capable of fully detaining the 1-percent (100-year) storm. A storm greater than that, however, could flow through the emergency spillway and cause downstream flooding.

1.3.3 STORMWATER QUALITY

AMAFCA is also concerned with protecting water quality for Albuquerque and its surrounding areas. AMAFCA's entire system is a regional stormwater quality treatment train for stormwater. AMAFCA has designed and built many structures that catch debris, sediment, and trash. These structural Best Management Practices (BMPs) protect the Rio Grande from pollution and are often modeled in the UNM Hydraulics Lab to enhance their debris capturing capability. AMAFCA's dams function not only as flood control facilities but

also as water quality structures, trapping sediment and debris. In addition to structural BMPs, AMAFCA's stormwater quality program utilizes many non-structural BMPs, including many cooperative elements with other MS4 permittees and organizations in the Middle Rio Grande watershed.

1.4 COMPLIANCE WITH OTHER LAWS AND REGULATORY REQUIREMENTS

Part I.D.1 of the MS4 Permit states that if a Permittee is already in compliance with one or more requirements of the MS4 Permit – because it is already subject to and complying with a related local, state, or federal requirement that is at least as stringent as the MS4 Permit requirement – the Permittee may reference the relevant requirement as part of the SWMP and document why the MS4 Permit requirement has been satisfied.

The NM Office of the State Engineer (OSE) and Interstate Stream Commission (ISC) regulates the water delivery to the Rio Grande to meet water delivery requirements to Texas and downstream water rights; therefore, AMAFCA's objective is to design its facilities to drain within 96 hours per the OSE requirements. In addition, AMAFCA follows the guidance from the New Mexico Environment Department (NMED), OSE, and EPA in the “Green Infrastructure Implementation in New Mexico – Frequently Asked Questions and Guidance from NMED and OSE” related to green stormwater infrastructure (GSI) implementation that satisfies both water quantity and water quality obligations in the arid West. This guidance document is included as an attachment to AMAFCA's Post-Construction Strategy and Procedures Notebook.

1.5 LEGAL AUTHORITY

AMAFCA has the legal authority to convey discharges entering its flood control system to the Rio Grande. The AMAFCA flood control system collects stormwater generated by the other MS4 permittees namely: The City of Albuquerque, UNM, NMDOT, Bernalillo County, SSCAFCA, and the Village of Los Ranchos. The AMAFCA facilities protect area residents from flood flows and convey said flows to the receiving waters of the Rio Grande. AMAFCA does not have legal authority to pass ordinances. AMAFCA can use contractual agreements for activities conducted on their property as a means to provide legal authority related to MS4 Permit requirements.

2 SWMP GENERAL COMPONENTS AND REQUIREMENTS

As described in Section 1.1, AMAFCA has developed and will implement and enforce a SWMP that is designed to reduce the discharge of pollutants to the maximum extent practicable, to protect water quality, and to satisfy applicable surface water quality standards. The AMAFCA MS4 Program includes innovative, cooperative, and effective elements to address the Southwest's arid challenges of and to meet the MS4 Permit objectives. The SWMP addresses the MS4 Permit Special Conditions (Part I.C), contains the eight (8) Control Measures required in Part I.D.5 of the MS4 Permit, and addresses the applicable Monitoring and Assessment requirements in Part III of the MS4 Permit. The SWMP addresses each applicable MS4 Permit activity with a proposed plan to meet the required MS4 Permit activity, measurable goal(s) for the proposed plan, implementation schedule requirement, and identification of responsible AMAFCA personnel. Program development relative to cooperative and non-cooperative permit requirements was phased over five years from the effective date of the MS4 Permit (December 22, 2014). The preparation and implementation of the FY 2021 SWMP has been done after the expiration date of the MS4 Permit but during the current period Administrative Continuance and before the issuance of a new MS4 Permit. AMAFCA has created a MS4 Strategies and Procedures Notebook that functions as a living document for the various requirements, procedures, and documents for each MS4 Program discussed in this SWMP. The general SWMP components, organization, review process, and modification process are described in the sections below.

2.1 SPECIAL CONDITIONS SWMP COMPONENTS

Part I.C of the MS4 Permit defines the Special Conditions requirements. These elements are outlined below, and program details are provided in the SWMP tables in Section 3.

- Compliance with Water Quality Standards (Part I.C.1) – This section of the MS4 Permit includes provisions to ensure that MS4 discharges do not cause or contribute to exceedances of applicable surface water quality standards. Under this section, there is a Dissolved Oxygen (DO) Program (Part I.C.1.d), a Polychlorinated Biphenyl (PCBs) Program (Part I.C.1.e), and a Temperature Program (Part 1.C.1.f).
- Discharges to Impaired Waters with and without Approved TMDLs – This section of the MS4 Permit (Part I.C.2.b.(i) and Tables 1.a - TMDL Bacteria Program and 1.b -

TMDL Nutrient Program - Part I.C.2.b.(iii)) requires that the SWMP have controls that target the pollutants of concern identified for any impaired receiving waters. There are specific MS4 Permit requirements if the impaired water body has a Total Maximum Daily Load (TMDL) approved by EPA and NMED. The TMDL and impairments listed below are referenced in NMED's *2020-2022 State of New Mexico Clean Water Act Section 303(d)/Section 305(b) Integrated Report, Appendix A Integrated List*, State of New Mexico Water Quality Control Commission, NMED Surface Water Quality Bureau (website link: <https://www.env.nm.gov/surface-water-quality/303d-305b/>).

- For the Rio Grande through Albuquerque, there is a TMDL for E. coli (finalized in 2010). This TMDL applies to the AMAFCA MS4 area for the Rio Grande from US Hwy 550 Bridge to Angostura Diversion (Waterbody ID NM-2105.1_02), the Rio Grande from Alameda Bridge to US Hwy 550 Bridge (Waterbody ID NM-2105.1_00), the Rio Grande from Tijeras Arroyo to Alameda Bridge (Waterbody ID NM-2105.1_51), and the Rio Grande from Isleta Pueblo boundary to Tijeras Arroyo (Waterbody ID NM-2105_50). With the 2020 assessment, there is also now an impairment for E. coli for this entire reach of the Rio Grande from the Angostura Diversion to the Isleta Pueblo Boundary. The E. coli impairment had been removed from 2016-2020 for the Rio Grande segments in the Middle Rio Grande north of the Tijeras Arroyo.
- This section of the MS4 Permit also has requirements for waters with impairments that do not yet have TMDLs. The Rio Grande has the following impairments, without TMDLs, in the MS4 area:
 - E. coli – In addition to the TMDL defined above, four reaches of the Rio Grande through Albuquerque are also impaired for E. coli – Rio Grande from Isleta Pueblo boundary to Angostura Diversion – (Waterbody IDs NM-2105.1_00, NM-2105.1_51, NM-2105_50, and NM-2105.1_02);
 - Dissolved Oxygen – Rio Grande from Isleta Pueblo boundary to Alameda Bridge (Waterbody IDs NM-2105.1_50 and NM-2105_51);
 - PCBs – Fish Consumption Advisory – Rio Grande from Isleta Pueblo boundary to US Hwy. 550 – (Waterbody IDs NM-2105.1_00, NM-2105.1_51, and NM-2105_50);
 - Polychlorinated Biphenyls (PCBs) – Rio Grande Alameda Bridge to US Hwy. 550 (Waterbody ID NM-2105_00);

- Mercury – Fish Consumption Advisory – Rio Grande from Isleta Pueblo boundary to US Hwy. 550 – (Waterbody IDs NM-2105.1_00, NM-2105.1_51, and NM-2105_50);
- Gross Alpha, adjusted – Rio Grande Alameda Bridge to US Hwy. 550 (Waterbody ID NM-2105_00); and
- Temperature – Rio Grande Tijeras Arroyo to Alameda Bridge (Waterbody ID NM-2105_51).
- The above impairments are based on designated water uses for the Rio Grande as defined in New Mexico's Water Quality Standards, codified at 20.6.4 NMAC. 20.6.4.105 and 20.6.4.106, which defines the designated uses for the Rio Grande from the headwaters of Elephant Butte reservoir upstream to Angostura Diversion Works, excluding waters on Isleta Pueblo, as irrigation, marginal warm water aquatic life, livestock watering, public water supply, wildlife habitat, and primary contact.
- For the Rio Grande, there are currently no impairments for nutrients. The Tijeras Arroyo, upstream of the Four Hills Bridge, is impaired for nutrients with a TMDL for nutrients finalized in Oct. 2017. AMAFCA's operation and maintenance authority and access to the Tijeras Arroyo terminates at the Four Hills Bridge. Therefore, there are no requirements in this SWMP to comply with the activities and schedules related to Impairment for Nutrients in Table 1.b in Part I.C.2.b.(iii). AMAFCA does monitor for nutrients through its Wet Weather Monitoring Program; see Section 2.3.
- Compliance with Endangered Species Act Requirements (Part I.C.3) –

This section of the MS4 Permit includes provisions consistent with the U.S. Fish and Wildlife Service (USFWS) Biological Opinion (BO) related to the Middle Rio Grande (MRG) Watershed MS4 Permit dated August 21, 2014 – Cons. #22420-2011-F-0024-R001. This section has two requirements: Dissolved Oxygen Strategy and Sediment Pollutant Load Reduction Strategy.

 - For the AMAFCA SWMP, the Dissolved Oxygen Strategy required in this section has been combined with the Compliance with Water Quality Standards – Dissolved Oxygen (DO) Program (Part I.C.1.d) due to the similar MS4 Permit requirements.
 - For the Sediment Pollutant Load Reduction Strategy, AMAFCA facilities function as regional flood control facilities as well as BMPs to remove

sediment from stormwater before the stormwater reaches the Rio Grande. In the MRG MS4 area, AMAFCA is not contributing to the sediment pollutant load but rather functioning to capture the sediment pollutant load generated throughout the watershed by MS4s contributing runoff to AMAFCA facilities. As such, AMAFCA does not want to reduce the sediment loads but rather continue targeted controls to increase the capture of sediment in its facilities. AMAFCA's Program for this MS4 Permit element focuses on assessing its facilities related to sediment capture and improving, or potentially expanding, its facilities and operations to improve sediment capture.

2.2 CONTROL MEASURES SWMP COMPONENTS

Each applicable Control Measure program required in Part I.D.5 of the MS4 Permit is addressed in this SWMP. Details for these MS4 Program requirements, procedures, and documents are available in AMAFCA's MS4 Strategies and Procedures Notebook. There are eight (8) Control Measures in the MS4 Permit; these are described in general terms below with program details provided in the SWMP tables in Section 3.

- Construction Site Runoff Control Program (Part I.D.5.a and Table 2) – This program has controls related to the discharge of stormwater and pollutants from construction activities that result in a land disturbance of greater than or equal to one (1) acre. This program is not intended to cover routine operation and maintenance activities performed by or under the direction of AMAFCA. As part of the program, AMAFCA participates in cooperative development reviews conducted with area agencies, which are facilitated by the cooperative incentives of this unique Watershed Based MS4 Permit. These reviews include construction site runoff control aspects and consideration of GSI/LID/sustainable practices for projects. For this program, AMAFCA utilizes its detailed MS4 Program Strategy and Procedures Notebook section, which requires the Contractor's SWPPP to be methodically reviewed and outlines MS4 inspection requirements.
- Post-Construction Stormwater Management Program for New Development and Redevelopment (Part I.D.5.b and Table 3) – This program addresses stormwater runoff from new development and redevelopment projects after construction site stabilization has been achieved to minimize water quality impacts. Parts of this section are not applicable to AMAFCA as AMAFCA does not have any development or redevelopment projects. All AMAFCA projects are regional flood

control or water quality projects. AMAFCA does not have jurisdiction over private or public (non-AMAFCA) development or redevelopment projects; this responsibility lies with other MS4s in the Middle Rio Grande watershed. AMAFCA facilities receive stormwater after it flows through new development and redevelopment. As a result, several MS4 Permit activities in this section do not apply to AMAFCA. AMAFCA's well renowned maintenance crew and routine operation & maintenance (O&M) activities address post-construction stormwater management at all AMAFCA facilities.

In addition, AMAFCA promotes the use of its infrastructure as regional water quality facilities. This Watershed Based MS4 Permit allows for Alternative Compliance due to site constraints for post-construction stormwater management. With AMAFCA's unique flood and stormwater quality infrastructure and successful maintenance program, AMAFCA facilities are often viable alternatives to the community for post-construction stormwater management. Also related to post-construction stormwater management, AMAFCA leverages their Project Schedule process by utilizing open lines of communication with watershed MS4s and area agencies to discuss areas requiring drainage and stormwater quality improvements, project priorities, and multiagency funding opportunities. The project inputs from other MS4s are screened for potential integration into a biennial AMAFCA Project Schedule which includes priorities, schedules, and cost sharing opportunities facilitating a unified, community approach to infrastructure planning.

- Pollution Prevention / Good Housekeeping Program (Part I.D.5.c and Table 4) – The goal of this program is to prevent or reduce pollutant runoff from AMAFCA operations through training, maintenance, and waste management. From its elected Board to its Executive Engineer to its maintenance crew, AMAFCA prioritizes the maintenance, operations, and aesthetics of its facilities. As a result, pollution prevention and good housekeeping are inherent to AMAFCA activities and are part of the AMAFCA culture. With AMAFCA being a non-traditional MS4, its pollution prevention and good housekeeping program differs from other MS4s in the community in that its program extends throughout the watershed rather than focusing primarily on industrial-type facilities. For example, as part of this MS4 Program and through regular business operations, AMAFCA conducts regular inspections and maintenance throughout the watershed for infrastructure that includes 21 flood control dams, 50 smaller flood-control ponds, 77 miles of arroyo

channels, 11 miles of underground conduit structures, and 10 miles of dikes and diversion structures. Related to infrastructure, AMAFCA has become a regional leader in integrating flood control infrastructure and stormwater quality facilities. AMAFCA stormwater quality and debris-removal facilities annually collect an average of 50,000 cubic yards of sediment and 2,500 cubic yards of trash from stormwater before the runoff enters the Rio Grande.

- Industrial and High-Risk Runoff (Part I.D.5.d and Table 5) – This is a program to minimize the contribution of pollutants to the MS4 associated with industrial activity in the MS4. This section is not applicable to AMAFCA. AMAFCA certified with submittal of its NOI and each SWMP that no such industrial activities are in AMAFCA's jurisdiction, and this program element does not apply.
- Illicit Discharges and Improper Disposal (Part I.D.5.e and Table 6) – The goal of this program is to detect and eliminate illicit discharges into stormwater. The program elements also prohibit illicit dumping or disposal of materials, other than stormwater, into the MS4. The program includes a notification process and incident investigation and reporting process, procedures for testing, if necessary, an educational component, and an AMAFCA spill prevention and response plan. AMAFCA's successful illicit discharge and improper disposal control program depends on strong collaborative programs and community relationships, as well as its staff's commitment to addressing illicit discharges. AMAFCA has leveraged in effect to team with the City of Albuquerque on its 311 Community Contact Center hotline (includes website and phone app) for reporting illicit discharges, illegal dumping, and improper disposal. The Albuquerque Bernalillo County Water Utility Authority (ABCWUA) provides documentation of sanitary sewer overflows to AMAFCA for the reporting period on a monthly basis. AMAFCA has pro-actively mobilized its maintenance crew as needed in response to ABCWUA sanitary sewer overflow notifications to help detain a given spill in a temporary earthen dam before reaching more of the downstream stormwater conveyance system or the river. AMAFCA has an established tracking system that receives reports from the over 300 sq. mi. area and ensures AMAFCA can address illicit discharges, improperly disposed trash and debris, and other reported concerns within its jurisdiction in a timely manner. AMAFCA also uses GIS to track illicit discharge reports and identify areas of concern where additional public outreach and education may be needed. AMAFCA is the leader in the watershed for its GIS stormwater facilities map. The

map represents facilities throughout the Albuquerque Metropolitan Area for multiple agencies and is essential for ensuring that proper organizations are contacted and involved in any illicit discharge reports, assessment, removal, and/or enforcement.

- Control of Floatables Discharges Program (Part I.D.5.f and Table 7) – This program is intended to address and control floatables in stormwater discharges to the MS4 through implementation of source controls and structural controls (BMPs). Control of floatables ties into pollution prevention and good housekeeping measures as well as illicit discharge and improper disposal measures. This is a program area where AMAFCA 's regional facilities and operations have a widespread, positive impact to the watershed. AMAFCA created a detailed crew tracking system, which is detailed in this MS4 Program Strategy and Procedures Notebook section, to document the MS4 Program activities and enhance program effectiveness.
- Public Education and Outreach on Stormwater Impacts (Part I.D.5.g and Table 8) – This program provides education and outreach programs to the community related to the impact human activities have on the water quality of the Rio Grande. This Control Measure is approached through a unique, well-organized cooperative group organized as the Middle Rio Grande Stormwater Quality Team (MRGSQT). The MRGSQT has grown to 12 organizations who leverage their resources to ensure MS4 Permit public education and outreach requirements are met with the goal of preventing and reducing stormwater pollution throughout the watershed from reaching the Rio Grande. The MRGSQT provides public education and outreach on stormwater impacts through different media and methods, reaching wide-spread target audiences, and focusing on target pollutants including pet waste, illicit discharges, and trash/debris. Currently, the MRGSQT funds classroom and field education programs, media campaigns, brochures, giveaways, display booths/kiosks, websites, and a Facebook page.
- Public Involvement and Participation (Part I.D.5.h and Table 9) – This Control Measure encourages public involvement and provides opportunities for participation in public outreach activities as well as in the review, modification, and implementation of the SWMP. Many of the MRGSQT activities also apply to the public involvement and participation MS4 Permit components. AMAFCA and the MRGSQT recognize the importance of public involvement - this is a critical key to the success of the MS4 Programs. Many of the MS4 Program elements require

awareness and public behavioral changes, such as picking up pet waste, proper disposal of litter, and proper disposal of household hazardous wastes. A few examples of AMAFCA's commitment to public participation and involvement as well as their focus to keep these activities innovative and interesting include: 1) Volunteer "community science" monitoring is conducted through the Bosque Ecosystem Monitoring Program (BEMP), 2) AMAFCA organizes community volunteers and provides supplies to keep Mutt Mitt Stations stocked throughout the watershed, and 3) AMAFCA compiles surveys from events and completes data trend analyses to help direct future public outreach and educational events and to assess the impact of the activities on public behavior.

2.3 MONITORING SWMP COMPONENTS

Part III.A of the MS4 Permit defines the monitoring and assessment program requirements and objectives. As applicable, three (3) MS4 Permit elements have been added to the AMAFCA SWMP: Wet Weather Monitoring (Part III.A.1 and Table 10), Dry Weather Discharge Screening (Part III.A.2), and Floatables Monitoring (Part II.A.3). Industrial and High-Risk Runoff Monitoring (Part III.A.4) is not part of AMAFCA's SWMP, and with submittal of its NOI and the SWMP, AMAFCA certified that no such industrial activities are in AMAFCA's jurisdiction, and therefore this program element does not apply.

For the Wet Weather Monitoring, AMAFCA is a partner in the Compliance Monitoring Cooperative (CMC). The CMC has delegated that SSCAFCA manage the work associated with CMC sample collection and AMAFCA manage the work associated with data verification, entry into a database, and reporting. Included with AMAFCA's reporting task, the CMC members, except for the City of Albuquerque, have delegated authority to AMAFCA through signed Memorandums of Understanding (MOUs) to enter the CMC data into the EPA electronic Discharge Monitoring Report (DMR) forms. Delegation of the DMR data entry by AMAFCA was approved by EPA Region 6, Compliance Assurance and Enforcement Division.

The MRG Watershed Based MS4 Permit entered Administrative Continuance in Dec. 2019 when EPA Region 6 did not issue a new MS4 Permit before the current MS4 Permit's expiration date. The MRG TAG sent EPA a letter dated October 15, 2019 acknowledging Administrative Continuance after the expiration date of the 5-year permit term. Until a new MS4 Permit is issued, there are no wet and dry weather monitoring requirements in the Rio Grande.

2.4 SWMP ORGANIZATION

AMAFCA's SWMP is organized in a tabular format in an Excel Database. The detailed SWMP tables are provided in Section 3. The SWMP tables are organized following the MS4 Permit organization. The SWMP includes:

- Permit Activity Description – This contains the MS4 Permit requirements, MS4 Permit language, and MS4 Permit references.
- Proposed Plan – This contains AMAFCA's strategy to comply with the required MS4 Permit activity. This section will identify if AMAFCA is involved in a cooperative program for this MS4 Permit element. Cooperative programs are encouraged with this MS4 Permit (Part I.B.4). Section 3, Table A, provides a list of the current AMAFCA cooperative programs.
- Measurable Goal – This contains specific actions that AMAFCA proposes to complete to meet its Proposed Plan.
- Permit Required Implementation Schedule – This contains the implementation schedules listed in the MS4 Permit for the specific MS4 Permit activity, as applicable. The MS4 Permit implementation schedules for AMAFCA are either the Permittee Class A or the Cooperative, depending on the MS4 Permit activity and if AMAFCA has a cooperative program for that activity.
- Responsible Personnel – This contains a list of AMAFCA responsible personnel for the MS4 Permit activity.

In addition, AMAFCA will add columns annually for Status of Implementation and Performance Assessment. These sections will be completed during the Annual Report review of the SWMP. Additional columns may be added to the database, as necessary, to help AMAFCA manage and track the SWMP elements. This process is being reviewed during Administrative Continuance and may be modified to more efficiently report on the numerous MS4 Permit requirements.

2.5 PROCESS OF SWMP REVIEWS

According to the requirements in Part I.D.6.a, the SWMP will undergo an annual review in conjunction with preparation of the Annual Report (required in Part III.B). The review will include the following components:

- A discussion of progress made in SWMP implementation, including achievement of measurable goals and compliance with program elements and other MS4 Permit conditions.

- An evaluation of the effectiveness of the SWMP in complying with the MS4 Permit with respect to controlling pollutant discharges and complying with water quality standards and TMDLs. This evaluation will include identifying necessary modifications needed for the SWMP, if applicable.
- The adequacy of staff (man hours needed and projected), funding levels, equipment, and support capabilities to fully implement the SWMP and comply with the MS4 Permit conditions.

As required in Part III.B, the year one (1) and year four (4) Annual Reports included submittal of a complete SWMP revision. Beginning with Revision 5, AMAFCA will stagger its SWMP updates from its Annual Report submittals such that each updated SWMP will be applicable to each fiscal year (FY) of annual reporting (July 1 to June 30). The SWMP updates will include the updates identified during the annual review process.

2.6 REQUIREMENTS FOR PUBLIC REVIEW AND COMMENTS

This MS4 Permit does not explicitly state the public notice time frame requirements for SWMP changes. According to the requirements in Part III.B related to the Annual Report, “at least forty-five (45) days prior to submission of each Annual Report, the permittee must provide public notice of and make available for public review and comment a draft copy of the Annual Report. All public input must be considered in preparation of the final Annual Reports and any changes to the SWMP. AMAFCA will provide public notice of and make available for public review and comment a draft copy of each revised SWMP at least thirty (30) days prior to the revised SWMP becoming effective. All public input will be considered in preparation of the updated SWMP document.

2.7 PROCESS OF SWMP MODIFICATIONS

The SWMP may be modified under the conditions described below.

2.7.1 PERMITTEE-INITIATED MODIFICATIONS

AMAFCA may modify this SWMP with prior notification or request to the EPA and NMED in accordance with Part I.D.6.b of the MS4 Permit. Modification requests or notifications shall be made in writing and signed in accordance with Part IV.H of the MS4 Permit.

- Modifications adding but not eliminating, replacing, or jeopardizing fulfillment of any component, control, or requirements of the SWMP can be made by the Permittee at any time upon written notification to the EPA.

- Modifications replacing or eliminating an ineffective or infeasible component, control, or requirement of the SWMP (including monitoring and analysis requirements described in Parts III.A and V of the MS4 Permit) may be requested of EPA in writing at any time. When requesting a modification, the Permittee shall include the following information:
 - A description of why the SWMP component is ineffective, unfeasible (including cost prohibitions), or unnecessary to support compliance with the MS4 Permit;
 - Expectations on the effectiveness of the proposed replacement component; and
 - An analysis of how the proposed replacement component is expected to achieve the goals of the component to be replaced.

2.7.2 EPA-REQUIRED MODIFICATIONS

Modifications may be requested by EPA (Part I.D.6.c) to address impacts to receiving water quality, include requirements to comply with new or revised regulations, add measures needed to comply with the Clean Water Act, or add measures needed to comply with the MS4 Permit. If modifications are requested by EPA, the Permittee will be provided with an opportunity to propose alternative program modifications to meet the objective of the requested modification.

2.7.3 DUE TO MODIFICATION OF THE MS4 PERMIT

The MS4 Permit may be reopened and modified (Part V), in accordance with 40 CFR §122.62, §122.63, and §124.5. Only those portions of the SWMP specifically required as MS4 Permit conditions shall be subject to the modification requirements of 40 CFR §124.5.

2.7.4 IMPLEMENTATION AND AUGMENTATION OF SWMP

According to Part VI.A, the permittee(s) shall comply with all elements identified in Parts I and III of the Permit for SWMP implementation and augmentation, and permit compliance. The EPA shall have 60 days from receipt of a modification or augmentation of the SWMP made in compliance with Part VI to provide comments or request revisions. During the initial review period, EPA may extend the time period for review and comment. The permittee(s) shall have 30 days from receipt of the EPA's comments or required revisions to submit a response. All changes to the SWMP or monitoring plans made to comply with schedules in Parts I and III must be approved by EPA prior to implementation.

AMAFCA has met the requirements in Part III.B for completing SWMP revisions and submitting to EPA with the year one (1) and year four (4) Annual Reports. Beginning with Revision 5, AMAFCA will stagger its SWMP updates from its Annual Report submittals such that each updated SWMP will be applicable to each fiscal year (FY) of annual reporting (July 1 to June 30) as required by the Permit. AMAFCA assumes from Part V1.A that a 90- to 120-day time period from submittal of its SWMP to EPA will be typical for SWMP approval (30-day comment period which may or may not run concurrent with the 60-day EPA review process plus an assumed 30-day AMAFCA response period). Therefore, submittal of SWMP updates to EPA between March 1 – April 1 of each year will provide AMAFCA with an approved SWMP by the July 1 start of the fiscal year. It is AMAFCA's intention that each Annual Report will only report progress relative to review of one SWMP revision. The FY 2022 Annual Report will reference this revision, Revision 6, of the SWMP, which will be effective from July 1, 2021 until June 30, 2022.

3 SWMP TABLES

As described in Section 2.4 above, AMAFCA's SWMP is organized in a tabular format in an Excel Database. The SWMP tables are provided on the following pages.

AMAFCA's current cooperative programs are listed below in Table A. Copies of the cooperative agreements are provided in Appendix D. In addition to the current cooperative agreements, AMAFCA is cooperating with other MS4 entities on many SWMP elements and is working to formalize these agreements. An example of a Cooperative Coordination Letter is provided in Appendix D. AMAFCA tracks these informal cooperation, procedures, and coordination agreements in its MS4 Strategies and Procedures Notebook.

Table A – SWMP Cooperative Programs

Cooperative Program Name	SWMP Element(s)	Cooperative Partner(s)	Agreement/ Procedure/ Coordination
Middle Rio Grande Stormwater Quality Team (MRGSQT)	<ul style="list-style-type: none"> ➤ Part I.C.1.d: Compliance with WQS-DO ➤ Part I.C.3.a: ESA-DO ➤ Part I.C.2.b: Impaired Waters w/TMDLs ➤ Part I.D.5.a: Construction <ul style="list-style-type: none"> ➤ Part I.D.5.b: Post-Construction ➤ Part I.D.5.c: Pollution Preventions/Good Housekeeping ➤ Part I.D.5.e: Illicit Discharge <ul style="list-style-type: none"> ➤ Part I.D.5.g: Public Education & Outreach ➤ Part I.D.5.h: Public Involvement & Participation 	AMAFCA City of Albuquerque Bernalillo County NMDOT-District 3 SSCAFCA Town of Bernalillo Village of Corrales Sandoval County Village of Los Ranchos ESCAFCA City of Rio Rancho	Intergovernmental Agreement
MS4 Technical Advisory Group (TAG)	<ul style="list-style-type: none"> ➤ Part I.D.5.a: Construction <ul style="list-style-type: none"> ➤ Part I.D.5.b: Post-Construction ➤ Part I.D.5.c: Pollution Preventions/Good Housekeeping ➤ Part I.D.5.e: Illicit Discharge <ul style="list-style-type: none"> ➤ Part I.D.5.f: Control of Floatables 	AMAFCA City of Albuquerque NMDOT-District 3 UNM Bernalillo County Sandoval County Village of Corrales City of Rio Rancho Village of Los Ranchos Kirtland Air Force Base (KAFB) Town of Bernalillo	Memorandum of Agreement

Cooperative Program Name	SWMP Element(s)	Cooperative Partner(s)	Agreement/ Procedure/ Coordination
		SSCAFCA ESCAFCA Sandia National Laboratory (DOE)	
MS4 Compliance Monitoring Cooperative (CMC)	<ul style="list-style-type: none"> ➤ Part I.C.2.b: Impaired Waters w/TMDLs ➤ Part III.A.1: Wet Weather Monitoring Program 	Bernalillo County AMAFCA City of Albuquerque NMDOT-District 3 UNM Sandoval County Village of Corrales City of Rio Rancho Village of Los Ranchos Town of Bernalillo SSCAFCA ESCAFCA	Intergovernmental Agreement and Memorandums of Understanding for Delegation of Authority to AMAFCA for Data Entry into DMR System (except for City of Albuquerque)
Capacity, Management, Operations and Maintenance (CMOM) Plan	<ul style="list-style-type: none"> ➤ Part I.C.2.b: Impaired Waters w/TMDLs ➤ Part I.D.5.e: Illicit Discharge 	ABCWUA City of Albuquerque AMAFCA Bernalillo County NMDOT-District 3 Village of Los Ranchos	Cooperative Procedure
Area & Agency Wide Project	<ul style="list-style-type: none"> ➤ Part I.D.5.b: Post-Construction ➤ Part I.D.5.c: Pollution Preventions/Good Housekeeping 	AMAFCA City of Albuquerque NMDOT-District 3	Annual Contract
Miscellaneous Construction Projects	<ul style="list-style-type: none"> ➤ Part I.D.5.c: Pollution Preventions/Good Housekeeping 	AMAFCA City of Albuquerque NMDOT-District 3	Annual Contract
GI/LID Impediments Assessment and Report	<ul style="list-style-type: none"> ➤ Part I.D.5.a: Construction ➤ Part I.D.5.b: Post-Construction 	AMAFCA Bernalillo County	Shared without cost allocation
Progress Evaluation Report for the Sediment Pollutant Load Reduction Strategy	<ul style="list-style-type: none"> ➤ Part I.C.3.b: ESA-Sediment 	AMAFCA Bernalillo County City of Albuquerque SSCAFCA	Shared without cost allocation
Gross Debris Study	<ul style="list-style-type: none"> ➤ Part I.D.5.f: Control of Floatables 	AMAFCA Bernalillo County	Shared without cost allocation

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
	3	Part I.C - Special Conditions				
	4	Compliance with Water Quality Standards – General Requirements - Part I.C.1.a - c				
Not Included in NOI	5	<u>Part I.C.1 - Compliance with Water Quality Standards</u> - Pursuant to Clean Water Act §402(p)(3)(B)(iii) and 40 CFR § 122.44(d)(1), this permit includes provisions to ensure that discharges from the permittee's MS4 do not cause or contribute to exceedances of applicable surface water quality standards, in addition to requirements to control discharges to the maximum extent practicable (MEP) set forth in Part I.D. Permittees shall address storm water management through development of the SWMP that shall include the following elements and specific requirements included in Part VI (sections below).	<u>Part I.C.1</u> - AMAFCA's proposed plan for compliance with related Permit activities are described in the applicable sections of the AMAFCA SWMP.	<ul style="list-style-type: none"> AMAFCA's measurable goals for compliance with related Permit activities are described in the applicable sections of the AMAFCA SWMP. 	No Permit required schedule.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern
Not Included in NOI	6	<u>Part I.C.1.a</u> - Permittee's discharges shall not cause or contribute to an exceedance of surface water quality standards (including numeric and narrative water quality criteria) applicable to the receiving waters. In determining whether the SWMP is effective in meeting this requirement or if enhancements to the plan are needed, the permittee shall consider available monitoring data, visual assessment, and site inspection reports.	<u>Part I.C.1.a</u> - Compare AMAFCA monitoring data results to applicable surface water quality standards that occur in the following programs: Compliance with Water Quality Standards - Dissolved Oxygen Program, Compliance with Water Quality Standards - PCB Program, Compliance with Water Quality Standards - Temperature Program, Compliance with Water Quality Standards - Discharges to Impaired Waters with Approved TMDL Program, and the Wet Weather Monitoring Program. Refer to these sections for additional information.	<ul style="list-style-type: none"> Compare AMAFCA monitoring data results to applicable surface water quality standards that occur in the following programs: Compliance with Water Quality Standards - Dissolved Oxygen Program, Compliance with Water Quality Standards - PCB Program, Compliance with Water Quality Standards - Temperature Program, Compliance with Water Quality Standards - Discharges to Impaired Waters with Approved TMDL Program, and the Wet Weather Monitoring Program. AMAFCA's measurable goals for compliance with related Permit activities are described in the applicable sections of the AMAFCA SWMP. 	No Permit required schedule.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern
Not Included in NOI	7	<u>Part I.C.1.b</u> - Applicable surface water quality standards for discharges from the permittees' MS4 are those that are approved by EPA and any other subsequent modifications approved by EPA upon the effective date of this permit found at New Mexico Administrative Code §20.6.4. Discharges from various portions of the MS4 also flow downstream into waters with Pueblo of Isleta and Pueblo of Sandia Water Quality Standards.	<u>Part I.C.1.b</u> - Compare AMAFCA monitoring data results to the applicable New Mexico Administrative Code §20.6.4, Pueblo of Isleta Water Quality Standards (amended on 3/18/2002, effective 7/22/2005 per EPA website), and Pueblo of Sandia Water Quality Standards (effective 3/9/2010). Compare AMAFCA monitoring data results to applicable surface water quality standards that occur in the following programs: Compliance with Water Quality Standards - Dissolved Oxygen Program, Compliance with Water Quality Standards - PCB Program, Compliance with Water Quality Standards - Temperature Program, Compliance with Water Quality Standards - Discharges to Impaired Waters with Approved TMDL Program, and the Wet Weather Monitoring Program. Refer to these sections for additional information.	<ul style="list-style-type: none"> Compare AMAFCA monitoring data results to applicable surface water quality standards that occur in the following programs: Compliance with Water Quality Standards - Dissolved Oxygen Program, Compliance with Water Quality Standards - PCB Program, Compliance with Water Quality Standards - Temperature Program, Compliance with Water Quality Standards - Discharges to Impaired Waters with Approved TMDL Program, and the Wet Weather Monitoring Program. AMAFCA's measurable goals for compliance with related Permit activities are described in the applicable sections of the AMAFCA SWMP. 	No Permit required schedule.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
Not Included in NOI	8	<p><u>Part I.C.1.c</u> - The permittee shall notify EPA and the Pueblo of Isleta in writing as soon as practical but not later than 30 calendar days following each Pueblo of Isleta water quality standard exceedance at an in-stream sampling location. In the event that EPA determines that a discharge from the MS4 causes or contributes to an exceedance of applicable surface water quality standards and notifies the permittee of such an exceedance, the permittee shall, within sixty (60) days of notification, submit to EPA, NMED, Pueblo of Isleta (upon request) and Pueblo of Sandia (upon request), a report that describes controls that are currently being implemented and additional controls that will be implemented to prevent pollutants sufficient to ensure that the discharge will no longer cause or contribute to an exceedance of applicable surface water quality standards. The permittee shall implement such additional controls upon notification by EPA and shall incorporate such measures into their SWMP as described in Part I.D of this permit. NMED or the affected Tribe may provide information documenting exceedances of applicable water quality standards caused or contributed to by the discharges authorized by this permit to EPA Region 6 and request EPA take action under this paragraph.</p>	<p><u>Part I.C.1.c</u> - AMAFCA will notify EPA and the Pueblo of Isleta of any Pueblo of Isleta of water quality standard exceedances at an in-stream sampling location (within the Rio Grande). Notification will be in writing as soon as practicable.</p> <p>Lab reports are typically received within 45 days of a sampling event. Preliminary review of the results typically requires 5 days. AMAFCA will include requirements to their contractors to review and report in-stream exceedances in a timely manner so that AMAFCA can better meet this requirement. AMAFCA will notify EPA and the Pueblo of Isleta within 30 days of the data review to determine a Pueblo of Isleta water quality standard exceedance at an in-stream (within the Rio Grande) sampling location. The Permit is unclear if this notification is required just for MS4 Permit compliance sampling, or if this includes results from other monitoring, such as citizen science projects. AMAFCA will provide this notification for in-stream samples that AMAFCA is involved with sampling, that result in a Pueblo of Isleta water quality standard exceedance.</p> <p>In addition, AMAFCA will continue to use sondes in the Rio Grande to monitor DO and temperature (refer to the Compliance with Water Quality Standards - Dissolved Oxygen (DO) Program). AMAFCA will continue to provide Isleta Pueblo with access to the real-time DO and temperature sonde data.</p>	<ul style="list-style-type: none"> • AMAFCA will notify EPA and the Pueblo of Isleta of any Pueblo of Isleta water quality standard exceedances at an in-stream sampling location (within the Rio Grande). Notification will be in writing as soon as practicable. • AMAFCA will add the in-stream notification of Pueblo of Isleta water quality standard exceedance to monitoring reporting tasks with sub-consultants to ensure that results are reviewed and reported in a timely manner. • AMAFCA will continue to use sondes in the Rio Grande to monitor DO and temperature (refer to the Compliance with Water Quality Standards - Dissolved Oxygen Program). AMAFCA will continue to provide Isleta Pueblo with access to the real-time DO and temperature sonde data. 	No Permit required schedule.	<p><u>Program</u> <u>Lead</u>: AMAFCA's Stormwater Quality Engineer</p> <p><u>Program</u> <u>Implementation</u>: Engineering Intern, Oiler/WQT</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

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	9	Compliance with Water Quality Standards – Dissolved Oxygen & Part I.C.1.d and Endangered Species Act (ESA) Requirements - Dissolved Oxygen				
Not Included in NOI	10	<p>According to the requirements in <u>Part I.C.1.d</u> and <u>Part I.C.3.a.(ii)</u>, the permittees shall revise the May 1, 2012 Strategy to continue taking measures to address concerns regarding discharges to the Rio Grande by implementing controls to eliminate conditions that cause or contribute to exceedances of applicable dissolved oxygen water quality standards in waters of the United States.</p> <p>The permittee shall, as part of this revised strategy, complete the following activities [activities are listed in sections below]. Activities listed are a combination of permit activities in Part I.C.1.d - Special Conditions, Compliance with Water Quality Standards, Phase I Dissolved Oxygen Program and Part I.C.3.a - Dissolved Oxygen Strategy in Receiving Waters of the Rio Grande.</p>	<p><u>Part I.C.1.d</u> and <u>Part I.C.3.a.(ii)</u> - The potential for low DO discharges to the Rio Grande at the NDC Embayment has been a concern which AMAFCA has been addressing, with the USFWS and EPA, since 2004. Several strategies, including various NDC Embayment modifications, have been implemented from 2011-2014. In 2015-2016, AMAFCA completed construction, after coordination with USFWS, of the NDC Outfall Grade Control Structures Modification Project and NDC Embayment Regrading Project.</p> <p>The NDC Embayment was filled in and regraded in 2015-2016, thereby removing the constant hydraulic connection between the Rio Grande and the NDC Bathtub/Outfall. In normal river flow conditions, water from the Rio Grande will not be able to stagnate in the Embayment and create low DO conditions. These improvement projects provide control measures to eliminate conditions that cause or contribute to exceedances of applicable DO water quality standards.</p> <p>These NDC projects and this Dissolved Oxygen Program Strategy were coordinated with the USFWS. AMAFCA received a Final BO from the USFWS and Special Conditions from USACE allowing the NDC Embayment to be filled in and revegetated.</p>	<ul style="list-style-type: none"> AMAFCA has completed the NDC Outfall Grade Control Structures Modification Project to fill in and revegetate the NDC Embayment and will continue following the terms of the Final BO from the USFWS and Final Special Conditions from USACE. This project is the revised strategy for the MS4 Permit elements related to DO. A new vegetation assessment study and removal training will be conducted to determine the types of vegetation and optimal time for seeding. A revised monitoring plan, developed in consultation with the USACE, will be in place moving forward. 	1 year from permit effective date Dec. 22, 2015	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation:</u> Engineering Intern</p>
Not Included in NOI	11	<p><u>Part I.C.1.d.(i)</u> and <u>Part I.C.3.a.(i)</u> - Identify (or continue identifying) structural elements, natural or man-made topographical and geographical formations, MS4 operations activities, or oxygen demanding pollutants contributing to reduced dissolved oxygen in the receiving waters of the Rio Grande. Both dry and wet weather discharges shall be addressed. Assessment may be made using available data or collecting additional data;</p>	<p><u>Part I.C.1.d.(i)</u> and <u>Part I.C.3.a.(i)</u>- The NDC Outfall/Embayment is the primary structural element identified by AMAFCA, City of Albuquerque, EPA, and USFWS as potentially contributing to low dissolved oxygen (DO) in the receiving waters of the Rio Grande. This Dissolved Oxygen Strategy is primarily focused on addressing this element.</p> <p>No other specific structural elements in the watershed have been identified as contributing to reduced DO in the receiving waters of the Rio Grande. Other stormwater outfalls, including the South Diversion Channel/Tijeras Arroyo, Calabacillas Arroyo, San Antonio Arroyo, will continue to be monitored.</p> <p>AMAFCA will continue to operate sondes in the Rio Grande deployed for monitoring DO and temperature. The sonde locations throughout the length of the Rio Grande through the UA will assist AMAFCA with bracketing segments of the Rio Grande to better understand elements that may be contributing to reduced DO in the receiving waters of the Rio Grande. DO results from AMAFCA monitoring efforts will assist AMAFCA in determining if there are other elements that may be contributing to reduced DO in the receiving waters of the Rio Grande. AMAFCA will update its SWMP if any other specific structural elements in the watershed are identified as contributing to reduced DO in the receiving waters of the Rio Grande.</p>	<ul style="list-style-type: none"> AMAFCA will follow the monitoring measurable goals in Part I.C.1.d.(iii) below. Related to identifying structural elements in the watershed that may be contributing to reduced DO, AMAFCA will continue to use sondes in the Rio Grande to monitor DO and temperature; the sonde data will provide valuable data related to potential DO - stormwater related connections. 	1 year from permit effective date Dec. 22, 2015	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation:</u> Engineering Intern, Oiler/WQT</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
Not Included in NOI	12	<p><u>Part I.C.1.d.(ii)</u> - Continue implementing controls, and updating/revising as necessary, to eliminate structural elements or the discharge of pollutants at levels that cause or contribute to exceedances of applicable water quality standards for dissolved oxygen in waters of the United States;</p>	<p><u>Part I.C.1.d.(ii)</u> - The primary controls for this DO Program are the NDC Outfall Grade Control Structures Modification Project and Embayment Grading Project. The water quality improvement goal for the NDC Outfall Grade Control Structures Modification Project is to improve maintenance operations, thereby improving efficiency of sediment, trash and debris removal due to better access and improved geometry. The NDC Embayment Regrading Project, as discussed above, removes the constant hydraulic connection between the Rio Grande and the NDC Bathtub/Outfall. These improvement projects provide control measures to mitigate conditions that cause or contribute to exceedances of applicable DO WQSs.</p> <p>In addition to the NDC Outfall and Embayment Projects, AMAFCA will continue to install stormwater quality structures within the watershed. AMAFCA plans, designs, and builds regional stormwater BMPs throughout the watershed to help eliminate the discharge of pollutants that cause or contribute to exceedances of applicable water quality standards for DO in waters of the Rio Grande.</p> <p>Pollutant source reduction strategies, such as public education and encouragement of GI/LID, are also part of the ongoing controls for this Program. AMAFCA actively participates in the MRGSQT, which organizes and leads public education, outreach, involvement, and participation activities which relate to this Program.</p>	<ul style="list-style-type: none"> AMAFCA will continue to plan, design, and build structural BMPs (regional water quality structures) throughout the MRG watershed. AMAFCA will continue to contribute and participate in the MRGSQT which provides public education, outreach, and participation opportunities related to stormwater impacts to water quality. 	1 year from permit effective date Dec. 22, 2015	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern</p>
Not Included in NOI	13	<p><u>Part I.C.1.d.(iii)</u> Continue sampling for DO and temperature in the North Diversion Channel (NDC) Embayment until the data indicate the discharge does not exceed applicable DO water quality standards in waters of the United States.</p> <p>This coincides with the requirements in <u>Part I.C.3.a.(ii)(a)</u>, the revised strategy shall include:</p> <p>A. A Monitoring Plan describing all procedures necessary to continue conducting continuous monitoring of DO and temperature in the NDC Embayment and at 1 location in the Rio Grande downstream of the mouth of the NDC within the action area (e.g., Central Bridge).</p> <p>B. A Quality Assurance and Quality Control (QA/QC) Plan describing all standard operating procedures, quality assurance and quality control plans, maintenance and implementation schedules that will assure timely and accurate collection and reporting of water temperature, DO, oxygen saturation, and flow. The QA/QC plan should include all procedures for estimating oxygen data when any oxygen monitoring equipment fail.</p>	<p><u>Part I.C.1.d.(iii)</u> - With the NDC Embayment filled in since 2016, AMAFCA cannot physically measure the DO in the Embayment. AMAFCA will provide continuous monitoring of DO and temperature (using sondes) in the Rio Grande at the most appropriate locations for the purpose of complying with the MS4 Permit requirements in Part I.C.1.d.(iii) and Part I.C.3.a.(ii)(a). The sonde locations throughout the stretch of the Rio Grande through the Urbanized Area (UA) will assist AMAFCA with bracketing segments of the Rio Grande to better understand locations of elements that may be contributing to reduced DO in the receiving waters of the Rio Grande.</p> <p>For compliance with this Permit Activity, AMAFCA will deploy sondes to provide continuous DO, oxygen saturation, and temperature monitoring; sondes are currently located at the following locations:</p> <ul style="list-style-type: none"> - Rio Grande at US 550 Bridge in Bernalillo - Rio Grande at Sandia Pueblo Boundary (just above the confluence with the NDC outfall) - Rio Grande at Central Ave. Bridge - Rio Grande at the Isleta Dam <p>Note - sonde locations may change based on the results and program needs as well as river stage.</p> <p><u>Part I.C.3.a.(ii)(a) A and B</u> - For the sonde monitoring, AMAFCA has standard operating procedures, quality assurance plans, maintenance, and implementation schedules in place.</p>	<ul style="list-style-type: none"> For compliance with this Permit Activity, AMAFCA will deploy sondes in the most appropriate locations to provide continuous DO and temperature monitoring. AMAFCA will continue following the standard operating procedures, quality assurance plans, maintenance, and implementation schedules that are in place for the sonde monitoring. AMAFCA will continue to pursue, as applicable, data collection and reporting improvements to this program. AMAFCA will continue to provide Isleta Pueblo with access to the real-time DO and temperature sonde data. 	1 year from permit effective date Dec. 22, 2015	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, Oiler/WQT</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

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Not Included in NOI	14	<p><u>Part I.C.1.d.(iv)</u> Submit a revised strategy to FWS for consultation and EPA for approval within a year of the effective date of the permit and progress reports with the subsequent annual reports. Progress reports to include:</p> <p>(a) Summary of data.</p> <p>(b) Activities undertaken to identify MS4 discharge contribution to exceedances of applicable dissolved oxygen water quality standards in waters of the United States. Including summary of findings of the assessment required in Part I.C.1.d.(i).</p> <p>(c) Conclusions drawn, including support for any determinations.</p> <p>(d) Activities undertaken to eliminate MS4 discharge contribution to exceedances of applicable dissolved oxygen water quality standards in waters of the United States.</p> <p>(e) Account of stakeholder involvement.</p> <p><u>Part I.C.3.a.(i)</u> - The permittees shall submit a summary of findings and a summary of activities undertaken with each Annual Report. The SWMP submitted with the first and fourth annual reports must include a detailed description of controls implemented (or/and proposed control to be implemented) along with corresponding measurable goals. (Applicable to all permittees).</p>	<p><u>Part I.C.1.d.(iv)</u> - AMAFCA completed the NDC project in 2016 to fill in and revegetate the NDC Embayment following the terms of the Final BO from the USFWS and Final Special Conditions from USACE. USFWS was consulted during this project and made aware of the revised strategy. The AMAFCA MS4 Annual Report and supporting documentation will be considered as the Progress Report. A separate progress report will not be submitted to EPA and USFWS. The MS4 Annual Report will include the Annual Incidental Take Report as an Attachment to the Annual Report.</p> <p><u>Part I.C.3.a.(i)</u> - The Annual Report will include a summary of example activities undertaken to identify elements contributing to reduced dissolved oxygen in the receiving waters of the Rio Grande and changes or improvements to the Strategy for implementation of controls to eliminate exceedances of applicable water quality standards for dissolved oxygen in waters of the United States.</p>	<ul style="list-style-type: none"> • AMAFCA completed the NDC Outfall Grade Control Structures Modification Project to fill in and revegetate the NDC Embayment following the terms of the Final BO from the USFWS and Final Special Conditions from USACE. • Vegetation assessments in this area will continue to be conducted following the current monitoring plan, developed in consultation with the USACE. • AMAFCA will complete the Incidental Take Report and follow the Incidental Take Reporting requirements and data submittal requirements. • AMAFCA will include a summary of example activities in each Annual Report. AMAFCA will incorporate documentation by reference into the Annual Report and plans to document progress on the AMAFCA website. 	<p>Revised strategy due - 1 year from permit effective date Dec. 22, 2015</p> <p>Progress reports submitted with subsequent annual report cover letters (Due Dec. 1).</p>	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation:</u> Engineering Intern</p>
Not Included in NOI	15	<p>According to the requirements in <u>Part I.C.3.a.(ii)</u>, the permittees shall ensure that actions to reduce pollutants or remedial activities selected for the NDC Embayment and its watershed are implemented such that there is a reduction in frequency and magnitude of all low oxygen stormwater discharge events that occur in the Embayment or downstream in the MRG as indicated in Table 1.c. Actions to meet the year 3 measurable goals must be taken within 2 years from the effective date of the permit. Actions to meet the year 5 measurable goals must be taken within 4 years from the effective date of the permit.</p>	<p><u>Part I.C.3.a.(ii)</u> - The result of removing the NDC Embayment and hydraulically disconnecting the NDC stormwater flows from the Rio Grande will minimize low DO conditions at this location. The Embayment has had historical issues with stagnate ponded water creating low DO conditions. The monitoring activities described above will be used to assess that the Embayment project functions as planned and that low DO conditions are reduced in both frequency and magnitude.</p>	<ul style="list-style-type: none"> • AMAFCA will compare the DO monitoring results for "qualifying events" as defined by USFWS with the MS4 Permit measurable goals as listed in Table 1.c, using the table in Appendix G in the MS4 Permit. • AMAFCA will utilize Levellogger data to better define volumetric runoff events that discharge to the Rio Grande. 	<p>Progress reports submitted with subsequent annual reports, as applicable (Due Dec. 1).</p>	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation:</u> Engineering Intern</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

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Not Included in NOI	16	According to the requirements in <u>Part I.C.3.a.(ii).(b)</u> , the permittees (COA and AMAFCA) shall provide: A. An Annual Incidental Take Report to EPA and the Service that includes the following information: beginning and end date of any qualifying stormwater events, DO values and water temperature in the NDC Embayment, DO values and water temperature at a downstream monitoring station in the MRG, flow rate in the NDC, mean daily flow rate in the MRG, evaluation of oxygen and temperature data as either anoxic or hypoxic using Table 2 of the BO, and estimate the number of silvery minnows taken based on Appendix A of the BO. Electronic copy of The Annual Incidental Take Report should be provided with the annual report required under Part III.B no later than December 1 for the proceeding calendar year.	<u>Part I.C.3.a.(ii).(b).A</u> - AMAFCA will complete the Incidental Take Report, which estimates the potential RGSM take using the method defined by USFWS for the BO (MRG Watershed Permit BO dated August 21, 2014 - Cons. #22420-2011-F-0024-R001). Using the BO procedure, AMAFCA will determine or measure, as technically feasible, the necessary data elements required for calculation of the predicted incidental takes during qualifying storm events. The definition of a qualifying storm event (for this Permit Activity) may be reassessed as the Levelogger data is analyzed for NDC Outfall and Embayment area. This activity may require additional follow-up with the EPA and the USFWS. The Annual Incidental Take Report will be provided with each Annual Report.	<ul style="list-style-type: none"> • AMAFCA will determine and/or measure, as technically feasible, the necessary data elements required for calculation of the predicted incidental takes during qualifying storm events. • AMAFCA will complete the Annual Incidental Take Report. • AMAFCA will provide EPA and USFWS with a copy of the Annual Incidental Take Report with each Annual Report submitted no later than December 1st for the preceding calendar year, as required under Part III.B. 	Progress reports submitted with subsequent annual reports, as applicable (Due Dec. 1).	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer
Not Included in NOI	17	According to the requirements in <u>Part I.C.3.a.(ii).(b)</u> , the permittees (COA and AMAFCA) shall provide: B. A summary of data and findings with each annual report to EPA and the FWS. All data collected (including provisional oxygen and water temperature data, and associated metadata), transferred, stored, summarized, and evaluated shall be included in the annual report. If additional data is requested by EPA or the FWS, COA and AMAFCA shall provide such information within two weeks upon request. The revised strategy required under Part I.C.3.a.(ii), the Annual Incidental Take Reports required under Part I.C.3.a.(ii).(b).A, and annual reports required under Part III.B can be submitted to FWS via e-mail nmesfo@fws.gov and Joel lusk@fws.gov, or by mail to the New Mexico Ecological Services field office, 2105 Osuna Road NE, Albuquerque, New Mexico 87113.	<u>Part I.C.3.a.(ii).(b).B</u> - AMAFCA will provide EPA and USFWS with the necessary data elements required for calculation of the predicted incidental takes during qualifying storm events and the Annual Incidental Take Report, required under Part I.C.3.a.(ii).(b).A. If additional data is requested by EPA or the USFWS, AMAFCA will provide requested information within two (2) weeks upon request. AMAFCA will assess the DO on the same time frame as the MS4 Permit requires for the Annual Report – July 1 to June 30. Each Annual Report will be submitted no later than December 1 for the preceding calendar year, as required under Part III.B.	<ul style="list-style-type: none"> • AMAFCA will provide EPA and USFWS the required data and information with each Annual Report submittal, required under Part III.B, no later than December 1 for the proceeding calendar year. 	Progress reports submitted with subsequent annual reports, as applicable (Due Dec. 1).	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Engineering Intern

NPDES Permit No. NMR04A000
AMAFCA SWMP

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	18	Compliance with Water Quality Standards – PCBs - Part I.C.1.e				
Not Included in NOI	19	According to the requirements in <u>Part I.C.1.e</u> , the permittee shall address concerns regarding PCBs in channel drainage areas specified in Part I.C.1.e.(vi) by developing or continue updating/revising and implementing a strategy to identify and eliminate controllable sources of PCBs that cause or contribute to exceedances of applicable water quality standards in waters of the United States. COA and AMAFCA shall submit a progress report with the first and with the subsequent annual reports.	<u>Part I.C.1.e</u> - The results from the 2012-2014 monitoring of the NDC watershed indicated the presence of PCBs at the Grantline and N. Camino Inlets. Based on the data, MS4 partners concluded that there are no "hot spots" in the municipal area that are continuing to produce PCBs with the possible exception of the Grantline and N. Camino watersheds. In 2014-2017, AMAFCA continued activities to identify and eliminate controllable sources of PCBs specific to these two channels. A water quality consultant was tasked with reviewing and assessing all past PCB data for the NDC, identifying commercial and industrial properties that may have contributed PCBs to the North Camino and the Grantline Channel, researching past PCB releases from PNM in these areas, and providing additional PCB monitoring activity recommendations. In addition, a Field Sampling Plan (FSP), Sampling Analysis Plan (SAP), and a Quality Assurance Project Plan (QAPP) for soil and sediment sampling were developed. Sediment sampling and analysis for PCBs in the North Camino and the Grantline Channel were provided to NMED for consultation and direction. Based on the data collection and analysis results from the first five (5) years of the MS4 Permit term (2014-2019), AMAFCA has met its goals and objectives related to the PCB investigation and no further PCB sampling by AMAFCA is anticipated. If future PCB sampling is needed, AMAFCA will utilize the developed FSP, SAP, and QAPP and coordinate with EPA, NMED, and other MS4s, as applicable.	<ul style="list-style-type: none"> Based on the data collection and analysis results from the first five (5) years of the MS4 Permit term (2014-2019), AMAFCA has met its goals and objectives related to the PCB investigation and no further PCB sampling by AMAFCA is anticipated. If future PCB sampling is needed, AMAFCA will utilize the developed FSP, SAP, and QAPP and coordinate with EPA, NMED, and other MS4s, as applicable. 	Progress reports submitted with subsequent annual reports, as applicable (Due Dec. 1).	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern
Not Included in NOI	20	<p><u>Part I.C.1.e</u> - The progress reports shall include:</p> <p>(i) Summary of data.</p> <p>(ii) Findings regarding controllable sources of PCBs in the channel drainages area specified in Part I.C.1.e.(vi) that cause or contribute to exceedances of applicable water quality standards in waters of the US via the discharge of municipal stormwater.</p> <p>(iii) Conclusions drawn, including supporting information for any determinations.</p> <p>(iv) Activities undertaken to eliminate controllable sources of PCBs in the drainage areas specified in Part I.C.1.e.</p> <p>(v) that cause or contribute to exceedances of applicable water quality standards in waters of the US via the discharge of municipal stormwater including proposed activities that extend beyond the 5 year permit term.</p> <p>(v) Account of stakeholder involvement in the process.</p> <p>(vi) Channel Drainage Areas: The PCB strategy required in Part I.C.1.e is only applicable to: COA and AMAFCA Areas: San Jose Drain and North Diversion Channel. Bernalillo County Areas: Adobe Acres Drain, Alameda Outfall Channel, Paseo del Norte Outfall Channel, and Sanchez Farm Drainage Area.</p>	<p><u>Part I.C.1.e</u> - Based on ownership responsibilities, COA will continue to take the lead regarding follow-up PCB permit activities on the SJD, and AMAFCA will continue to take the lead on follow-up PCB permit activities on the NDC. Bernalillo County will take the lead on Adobe Acres Drain, Alameda Outfall Channel, Paseo del Norte Outfall Channel, and Sanchez Farm Drainage Area, as assigned in the MS4 Permit. Based on the data collection and analysis results from the first five (5) years of the MS4 Permit term (2014-2019), AMAFCA has met its goals and objectives related to the PCB investigation and no further PCB sampling by AMAFCA is anticipated. Results from any continued study will be provided to NMED for consultation and direction. If future PCB sampling is needed, AMAFCA will utilize the developed FSP, SAP, and QAPP and coordinate with EPA, NMED, and other MS4s, as applicable.</p> <p>AMAFCA will continue internal watershed stormwater quality monitoring, which typically collects samples that are screened for PCBs at eight (8) locations. Collection of these samples are weather and equipment dependent. No additional Compliance Monitoring Cooperative (CMC) monitoring is required until a new MS4 Permit is issued. However, the CMC members will evaluate and may choose to continue sampling to support their MS4 program needs during administrative continuance. CMC monitoring would include collecting samples, and screening for PCBs, at two (2) locations within the Rio Grande - one upstream of the MS4 and one downstream of the MS4. This program uses Method 1668 for testing PCBs. Monitoring results obtained from AMAFCA's internal stormwater quality assessment monitoring program and any continued CMC stormwater quality monitoring are available upon request.</p>	<ul style="list-style-type: none"> Based on the data collection and analysis results from the first five (5) years of the MS4 Permit term (2014-2019), AMAFCA has met its goals and objectives related to the PCB investigation and no further PCB sampling by AMAFCA is anticipated. If future PCB sampling is needed, AMAFCA will utilize the developed FSP, SAP, and QAPP and coordinate with EPA, NMED, and other MS4s, as applicable. Results from any continued study will be provided to NMED. The Annual Report will serve as the progress report for additional PCB findings, if applicable. AMAFCA will incorporate documentation by reference into the Annual Report and plans to document progress on the AMAFCA website. AMAFCA will continue its internal stormwater quality assessment monitoring program, which includes collecting samples, and screening for PCBs, at eight (8) locations. The monitoring program typically includes collecting one stormwater sample per season (wet and dry), weather and equipment permitting, and screening for PCBs. This program uses screening Method 608 and follow-up sampling with Method 1668 if PCBs are detected. 	Progress reports submitted with subsequent annual reports, as applicable (Due Dec. 1).	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
Not Included in NOI	21	<p><u>Part I.C.1.e.(vi)</u> - A cooperative strategy to address PCBs in the COA, AMAFCA and Bernalillo County's drainage areas may be developed between Bernalillo County, AMAFCA, and COA. If a cooperative strategy is developed, the cooperative strategy shall be submitted to EPA within three (3) years from the effective date of the permit and submit a progress report with the fourth and with subsequent annual reports,</p> <p>Note: COA and AMAFCA must continue implementing the existing PCB strategy until a new Cooperative PCB Strategy is submitted to EPA.</p>	<p><u>Part I.C.1.e.(vi)</u> - An updated cooperative strategy, if warranted, will be discussed with COA, AMAFCA, and Bernalillo County through the cooperative MS4 Technical Advisory Group (MS4 TAG). If a cooperative strategy is agreed to, work will begin to develop an agreement and develop a cooperative strategy to submit to EPA.</p>	<p>• AMAFCA will discuss the updated cooperative strategy option, if warranted, with COA and Bernalillo County through the cooperative MS4 TAG.</p>	<p>If cooperative agreement submit within 3 years of effective date of the permit</p> <p>Dec. 22, 2017</p>	<p><u>Program Lead</u>: AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation</u>: Engineering Intern</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

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	22	Compliance with Water Quality Standards – Temperature - Part I.C.1.f				
Not Included in NOI	23	According to the requirements in <u>Part I.C.1.f</u> , the permittees must continue assessing the potential effect of stormwater discharges in the Rio Grande by collecting and evaluating additional data. If the data indicates there is a potential of stormwater discharges contributing to exceedances of applicable temperature water quality standards in waters of the United States, within 30 days such as findings, the permittees must develop and implement a strategy to eliminate conditions that cause or contribute to these exceedances. If the data indicates there is a potential of stormwater discharges contributing to exceedances of applicable temperature water quality standards in waters of Rio Grande, within 30 days such as findings, the permittees must develop and implement a strategy to eliminate conditions that cause or contribute to these exceedances.	<u>Part I.C.1.f</u> - AMAFCA and the original MS4 co-permittees (COA, NMDOT, and UNM) under MS4 Permit No. NMS000101 do not believe that stormwater discharges adversely affect temperature in the Rio Grande. In order to prove this assertion, temperature data from 1982 to 2012 was assembled and analyzed. This data analysis proved the assertion that the receiving waters of the Rio Grande are not adversely affected by the temperature of stormwater from the Albuquerque MS4. This data was presented in an initial report that was submitted to EPA on May 1, 2012. However, to meet the MS4 Permit requirements, AMAFCA continued assessing the potential effect of stormwater discharges in the Rio Grande by collecting and evaluating additional temperature data. From 2012 to 2017, temperature monitoring never showed a temperature exceedance at any of the monitoring locations in the watershed or in the river.	• AMAFCA's measurable goals for compliance with the Permit activities are described in the sections below.	See specific Permit activity schedules below.	See specific Permit activity below.
Not Included in NOI	24	The strategy must include: <u>Part I.C.1.f.(i)</u> - Identify structural controls, post construction design standards, or pollutants contributing to raised temperatures in the receiving waters of the Rio Grande. Both dry and wet weather discharges shall be addressed. Assessment may be made using available data or collecting additional data; <u>Part I.C.1.f.(ii)</u> - Develop and implement controls to eliminate structural controls, post construction design standards, or the discharge of pollutants at levels that cause or contribute to exceedances of applicable water quality standards for temperature in waters of the United States; and	<u>Part I.C.1.f.(i)</u> - AMAFCA has data supporting the fact that stormwater discharges do not adversely affect temperature in the Rio Grande. Assessment continues using temperature data collected in the Rio Grande using sondes (sondes are part of the Dissolved Oxygen - Compliance with Water Quality Standards and Endangered Species Act MS4 Permit program requirements). The four (4) sondes in the Rio Grande have real-time telemetry capabilities. The sonde locations throughout the length of the Rio Grande through the UA will assist AMAFCA with bracketing segments of the Rio Grande to better understand elements that may be contributing to high temperatures in the receiving waters of the Rio Grande. <u>Part I.C.1.f.(ii)</u> - If the temperature data trends begins to indicate that stormwater discharges are adversely affecting temperature in the Rio Grande, AMAFCA will develop a strategy to understand the causes and contributions. If this occurs, AMAFCA will work with COA in developing this strategy as it relates to the watershed. It is anticipated that development of controls will be a part of the strategy. The 30 day timeline in the MS4 Permit is not long enough to develop and implement a watershed wide strategy; AMAFCA and COA will work with EPA, as needed, to develop a reasonable time frame.	• Temperature data will continue to be collected in the Rio Grande using sondes. The sonde data will be available upon request.	No Permit required schedule.	Program Lead: AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Engineering Intern

NPDES Permit No. NMR04A000
AMAFCA SWMP

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Not Included in NOI	25	<p><u>Part I.C.1.f.(iii)</u> - Provide a progress report with the first and with subsequent Annual Reports. The progress reports shall include:</p> <p>(a) Summary of data.</p> <p>(b) Activities undertaken to identify MS4 discharge contribution to exceedances of applicable temperature water quality standards in waters of the United States.</p> <p>(c) Conclusions drawn, including supporting information for any determinations.</p> <p>(d) Activities undertaken to reduce MS4 discharge contribution to exceedances of applicable temperature water quality standards in waters of the United States.</p> <p>(e) Accounting of stakeholder involvement.</p>	<p><u>Part I.C.1.f.(iii)</u> - AMAFCA will include progress regarding temperature impacts from stormwater to the Rio Grande that include adherence to schedule, activities undertaken, monitoring results, and conclusions drawn with Annual Reports, as applicable. AMAFCA will incorporate documentation by reference into the Annual Report and plans to document progress on the AMAFCA website.</p> <p>AMAFCA has provided data from 1982 to 2017 showing that the Rio Grande is not adversely affected by the temperature of stormwater from the Albuquerque MS4. The temperature monitoring results do not show a temperature exceedance at any of the monitoring locations in the watershed or in the river.</p>	<p>• Any update of data, activities, and conclusions regarding temperature impacts from stormwater to the Rio Grande will be provided with each Annual Report, if applicable. AMAFCA will incorporate documentation by reference into the Annual Report and plans to document progress on the AMAFCA website.</p>	<p>Progress reports submitted with subsequent annual reports, as applicable (Due Dec. 1).</p>	<p><u>Program Lead</u>: AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u>: Engineering Intern</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

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	26	Discharges to Impaired Waters With Approved TMDLs - Part I.C.2.b.(i) and TABLE 1.a - TMDL Bacteria Program- Part I.C.2.b.(iii)				
Not Included in NOI	27	<p>According to the requirements in <u>Part I.C.2.b.(i)</u>, if the permittee discharges to an impaired water body with an approved TMDL (see MS4 Permit, Appendix B), where stormwater has the potential to cause or contribute to the impairment, the permittee shall include in the SWMP controls targeting the pollutant(s) of concern along with any additional or modified controls required in the TMDL and this section. As stated in the Permit, Appendix B, a bacteria TMDL for the Middle Rio Grande was approved by the New Mexico Water Quality Control Commission on April 13, 2010, and by EPA on June 30, 2010. The new TMDL modifies: 1) the indicator parameter for bacteria from fecal coliform to E. coli, and 2) the way the WLAs are assigned</p> <p>The SWMP and required Annual Reports must include information on implementing any focused controls required to reduce the pollutant(s) of concern as described below:</p>	<p><u>Part I.C.2.b.(i)</u> - A bacteria TMDL for the Middle Rio Grande was approved by the New Mexico Water Quality Control Commission on April 13, 2010, and by EPA on June 30, 2010. AMAFCA's proposed plans for compliance with the Permit activities are described in the sections below.</p>	<p>AMAFCA's measurable goals for compliance with the Permit activities are described in the sections below.</p>	<p>See specific Permit activity schedules below.</p>	<p>See specific Permit activity below.</p>
Not Included in NOI	28	<p><u>Part I.C.2.b.(i).(a)</u>, Targeted Controls: The SWMP submitted with the first Annual Report must include a detailed description of all targeted controls to be implemented, such as identifying areas of focused effort or implementing additional BMPs that will be implemented to reduce the pollutant(s) of concern in the impaired waters. and</p> <p><u>Part I.C.2.b.(i).(b)</u>, Measurable Goals: For each targeted control, the SWMP must include a measurable goal and an implementation schedule describing BMPs to be implemented during each year of the permit term. Where the impairment is for bacteria, the permittee must, at minimum comply with the activities and schedules described in Table 1.a of Part I.C.2.b.(iii).</p> <p>As required in <u>Part I.C.2.b.(i).(e)</u>, the permittee shall include focused BMPs addressing the five areas below:</p> <p><u>A. Sanitary Sewer Systems</u> - improve sanitary sewers; fix lift stations; identify and implement O&M procedures; improve violation reporting; and prevent overflows;</p> <p><u>B. On-site Sewage Facilities</u> - address failing systems and inadequate maintenance of On-Site Sewage Facilities;</p>	<p><u>Part I.C.2.b.(i).(a), (b), & (e)</u> -AMAFCA's proposed plan for targeted controls and measurable goals (see column to right) for bacteria include:</p> <p><u>A. Sanitary Sewer Systems - Targeted Controls:</u> There are no sanitary sewer systems owned or operated by AMAFCA within AMAFCA owned property. Related to the Illicit Discharges and Improper Disposal Control Measure, AMAFCA will receive monthly DMRs of sanitary sewer overflows (SSO) from ABCWUA. These will be evaluated to ensure that the SSOs did not impact AMAFCA facilities.</p> <p><u>B. On-site Sewage Facilities - Targeted Controls:</u> There are no on-site sewage facilities owned or operated by AMAFCA within AMAFCA-owned property.</p>	<p><u>A. Sanitary Sewer Systems - Measurable Goals:</u></p> <ul style="list-style-type: none"> • There are no sanitary sewer systems owned or operated by AMAFCA within AMAFCA-owned property. • Through the IDDE Program, AMAFCA will continue coordination with ABCWUA, who will inform AMAFCA of any SSOs that potentially impact AMAFCA facilities. AMAFCA will receive monthly DMRs of SSOs from ABCWUA. These will be evaluated to ensure that the SSOs did not impact AMAFCA facilities. AMAFCA will continue to add these to GIS to improve tracking of the SSOs. <p><u>B. On-site Sewage Facilities - Measurable Goals:</u></p> <ul style="list-style-type: none"> • Not applicable to AMAFCA 	<p>Address targeted controls in SWMP. Progress reports submitted with each Annual Report cover letter, as applicable (Due Dec. 1).</p>	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation:</u> Administrative Assistant, Engineering Intern, Real Estate Manager</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

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Not Included in NOI	29	Continuation of five areas in Part I.C.2.b.(i).(e) - <u>C. Illicit Discharges and Dumping</u> - effort to reduce waste sources of bacteria; for ex., septic systems, grease traps, and grit traps; <u>D. Animal Sources</u> - management programs to identify and target sources such as zoos, pet waste, and horse stables; <u>E. Residential Education</u> - bacteria from residential sites; fats, oils, and grease (FOG) clogging sanitary sewer lines and resulting overflows; decorative ponds; and pet waste.	<u>Part I.C.2.b.(i).(a), (b), & (e)</u> - Continuation - AMAFCA's proposed plan for targeted controls and measurable goals (see column to right) for bacteria include: <u>C. Illicit Discharges and Dumping - Targeted Controls</u> : AMAFCA has a robust IDDE Program. In the IDDE program, AMAFCA has focused on homeless camp cleanup and other efforts that target sources of bacteria. In addition, AMAFCA has manual and mechanical trash contracts to address IDDE cleanup. Refer to the Illicit Discharges and Improper Disposal Control Measure for additional information. <u>D. Animal Sources - Targeted Controls</u> : AMAFCA will continue its focus on reducing pet waste through its Mutt Mitt Stations Program and its involvement with the MRGSQT educational outreach "Scoop the Poop" and/or "There is No Poop Fairy" campaigns. <u>E. Residential Education - Targeted Controls</u> : AMAFCA will address this area through Public Education and Outreach and Public Involvement and Participation Control Measures through its involvement with the MRGSQT.	<u>C. Illicit Discharges and Dumping - Measurable Goals</u> : • <u>AMAFCA will address the Illicit Discharge and Dumping through its IDDE Program; refer to the Illicit Discharges and Improper Disposal Control Measure for additional information. This IDDE program includes illicit discharge monitoring by AMAFCA staff and crew that often involves weekly discussion at staff meetings. Reports of discharge are cooperatively investigated by staff including, if appropriate, tracking and documentation procedures. An annual budget line item exists for contracts to address IDDE cleanup.</u> <u>D. Animal Sources - Measurable Goals</u> : • <u>AMAFCA will continue to provide Mutt Mitt Stations and bags in an effort to reduce pet waste reaching stormwater.</u> • <u>AMAFCA will continue to contribute and participate in the MRGSQT. Through the MRGSQT, pet waste will be targeted through the "Scoop the Poop" and/or "There is No Poop Fairy" campaigns and other programs.</u> • <u>As funding becomes available, AMAFCA will participate and/or conduct microbial source tracking (MST) studies in the Middle Rio Grande.</u> <u>E. Residential Education - Measurable Goals</u> : • <u>The MRGSQT Outcomes Report will summarize the activities and is available upon request and AMAFCA plans to share this document on its website.</u>	Address measurable goals of targeted controls in SWMP. Progress reports submitted with each Annual Report cover letter, as applicable (Due Dec. 1).	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Administrative Assistant, Engineering Intern, GIS Manager, Real Estate Manager
	30	<u>Part I.C.2.b.(i).(c).B</u> - Identification of Measurable Goal: The SWMP must identify a measurable goal for the pollutant(s) of concern. The value of the measurable goal must be based on one of the following options in the Permit - AMAFCA is using Option B: B. Alternatively, if multiple permittees are discharging into the same impaired water body with an approved TMDL (which has an aggregate WLA for all permitted stormwater MS4s), the MS4s may combine or share efforts, in consultation with/and the approval of NMED, to determine an alternative sub-measurable goal derived from the WLA for the pollutant(s) of concern (e.g., bacteria) for their respective MS4. The SWMP must clearly define this alternative approach and must describe how the sub-measurable goals would cumulatively support the aggregate WLA. Where an aggregate WLA measurable goal has been broken into sub-measurable goals for individual MS4s, each permittee is only responsible for progress in meeting its WLA sub-measurable goal.	<u>Part I.C.2.b.(i).(c).B</u> - AMAFCA identified in its NOI that it was seeking, as part of a group of MS4s, an alternative sub-measurable goal for TMDL control under this part of the Permit. NMED and EPA were informed of this decision and NMED has worked with the CMC to help establish the cooperative waste load allocation (WLA) values and methodology for calculating E. coli loading. AMAFCA will continue following the established methodology for applying this to the CMC monitoring results.	• AMAFCA, as part of the CMC, will use the analytical results obtained in the Rio Grande during the CMC sampling and calculate an E. coli loading to compare with the waste load allocation allotted for the cooperative portion for the two defined stream assessment units of the Rio Grande (Isleta to Alameda and Alameda to Angostura). These calculations will be provided in each Annual Report, if applicable, as part of the CMC monitoring memos. AMAFCA will incorporate documentation by reference into the Annual Report and plans to provide documentation on the AMAFCA website.		<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer

NPDES Permit No. NMR04A000
AMAFCA SWMP

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Not Included in NOI	31	<p>According to the requirements in <u>Part I.C.2.b.(i),(f)</u>, the permittee shall monitor or assess progress in achieving measurable goals and determining the effectiveness of BMPs, and shall include documentation of this monitoring or assessment in the SWMP and Annual Reports. In addition, the SWMP must include methods to be used. This program element may be coordinated with the monitoring required in Part III.A. The permittee may use the following methods either individually or in conjunction to evaluate progress towards the measurable goal and improvements in water quality as follows:</p> <p>A. Evaluating Program Implementation Measures or B. Assessing Improvements in Water Quality</p> <p>Progress towards achieving the measurable goal shall be reported in the Annual Report. Annual reports shall report the measurable goal and the year(s) during the permit term that the MS4 conducted additional sampling or other assessment activities.</p>	<p><u>Part I.C.2.b.(i),(f)</u> - AMAFCA will assess and evaluate the program and progress in achieving the targeted controls and measurable goals listed above by tracking the number of educational outreach opportunities conducted and tracking the number of people reached through the educational outreach program. AMAFCA will incorporate documentation by reference into the Annual Report and plans to document progress on the AMAFCA website.</p> <p>AMAFCA is part of the Compliance Monitoring Cooperative (CMC) group, established in 2016, with 12 watershed partners cooperating for the Wet Weather Monitoring Program requirements. In addition, AMAFCA will monitor and test for E. coli at its facilities within the watershed. This internal monitoring program sampling will be done in accordance with Part III.A of the MS4 Permit and will assist with a water quality assessment of the overall watershed related to E. coli.</p>	<ul style="list-style-type: none"> The MRGSQT Outcomes Report will track the number of educational outreach opportunities conducted and list the number of people reached through the educational outreach program. This report is available upon request and AMAFCA plans to share this document on its website. AMAFCA will conduct stormwater monitoring in accordance with the Wet Weather Monitoring Program, Part III.A.1 as part of the CMC. The goals and plan for this program are described in the Wet Weather Monitoring Program portion of this SWMP. 	<p>Address monitoring and assessment of measurable goals of targeted controls in SWMP. Progress reports submitted with each Annual Report cover letter, as applicable (Due Dec. 1).</p>	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p>
Not Included in NOI	32	<p><u>Part I.C.2.b.(i),(g)</u> - If, by the end of the 3rd year from the effective date of the permit, the permittee observes no progress toward the measurable goal either from program implementation or water quality assessments, the permittee shall identify alternative focused BMPs that address new or increased efforts towards the measurable goal. As appropriate, the MS4 may develop a new approach to identify the most significant sources of the pollutant(s) of concern and shall develop alternative focused BMPs (this may also include information that identifies issues beyond the MS4's control). These revised BMPs must be included in the SWMP and subsequent Annual Reports. Where the permittee originally used a measurable goal based on an aggregated WLA, the permittee may combine or share efforts with other MS4s discharging to the same impaired stream segment to determine an alternative sub-measurable goal for the pollutant(s) of concern for their respective MS4s, as described in Part I.C.2.b.(i),(c).B above. Permittees must document the proposed schedule for the development and subsequent adoption of alternative measurable goals for the pollutant(s) of concern for their respective MS4s and associated assessment of progress in meeting those individual goals.</p>	<p><u>Part I.C.2.b.(i),(g)</u> - AMAFCA, in cooperation with the TAG, MRGSQT, and CMC has observed progress towards E. coli controls and measurable goals. However, the impairment for E. coli has been re-listed in NMED's 2020-2022 State of New Mexico Clean Water Act Section 303(d)/Section 305(b) Integrated Report for 3 of the 4 assessment segments along the river within the Middle Rio Grande corridor; all 4 assessment segments in the Middle Rio Grande, from Isleta Pueblo Boundary to Angostura, currently has an E. coli impairment. The CMC will continue to collect data during administrative continuance of the Permit to determine if the E. coli trend that previously de-listed the impairment or data that re-listed the impairment is the baseline.</p> <p>AMAFCA will annually assess and evaluate the program and progress in achieving the measurable goals listed in the sections above. In addition to the measurable goals listed above, Microbial Source Tracking (MST) studies may be a tool used for the assessment and evaluation of the program. AMAFCA will also continue to participate in regional water quality studies and plans, as opportunities become available, to continue to look for collaborative opportunities to improve this program.</p>	<ul style="list-style-type: none"> AMAFCA will continue to annually assess and evaluate the program and progress in achieving the measurable goals listed above. In addition to the measurable goals listed above, Microbial Source Tracking (MST) studies may be a tool used for the assessment and evaluation of the program. AMAFCA will continue to participate in regional water quality studies and plans, as opportunities become available. 	<p>If required, end of the third year from the effective date of the permit. Dec. 22, 2017</p>	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
Not Included in NOI	33	Part I.C.2.b.(iii) - Table 1.a, Identify potential significant sources of the pollutant of concern entering your MS4.	Part I.C.2.b.(iii) - Table 1.a - In 2014-2015, AMAFCA contracted with a consultant to restudy the bacteria within the Middle Rio Grande, specifically to evaluate the bacteria data over the recent history to report the trend analysis and the impact to the Rio Grande. The report for this study, Middle Rio Grande Rio Grande E. coli Analysis and Research report for AMAFCA by water quality on call engineer (CDM Smith), is available from AMAFCA upon request. An updated bacterial source tracking study is being assessed with COA and will be considered during this Permit term. AMAFCA, through the MRGSQT, has contracted with BEMP to study E. coli at various locations along the Rio Grande during dry weather in an effort to identify potential sources of E. coli. For determining the source (area) of E. coli, AMAFCA will continue its internal watershed stormwater quality monitoring. Collection of these samples are weather and equipment dependent.	<ul style="list-style-type: none"> AMAFCA, with its co-permittees from the 2012 MS4 Phase I Permit, have completed several studies related to identifying potential significant sources of the pollutant of concern entering the MRG Watershed MS4 area. The results of these studies will be used to guide the overall program plan and goals. An updated bacterial source tracking study is being assessed with COA and will be considered during this Permit term. AMAFCA, with the MRGSQT, has contracted with BEMP to study E. coli at various locations along the Rio Grande during dry weather in an effort to identify potential sources of E. coli. For determining the source (area) of E. coli, AMAFCA will continue its internal watershed stormwater quality monitoring. AMAFCA monitoring memos for the internal watershed stormwater quality monitoring are available upon request. 		Program Lead: AMAFCA's Stormwater Quality Engineer
Not Included in NOI	34	From Part I.C.2.b.(iii) - Table 1.a, Develop (or modify an existing program- for prior permittees under NMS000101) and implement a public education program to reduce the discharge of bacteria in municipal stormwater contributed by (if applicable) by pets, recreational and exhibition livestock, and zoos.	Part I.C.2.b.(iii) - Table 1.a - As stated above, AMAFCA will continue its focus on reducing pet waste through providing Mutt Mitt Stations and through continued involvement with the MRGSQT educational outreach "Scoop the Poop" campaign.	<ul style="list-style-type: none"> AMAFCA will continue to provide Mutt Mitt Stations and bags. AMAFCA will contribute and participate in the MRGSQT. The MRGSQT Outcomes Report will summarize the activities related to targeting pet waste sources and residential education targeting bacteria sources. This report is available upon request and AMAFCA plans to share this documentation on its website. 	16 months (cooperative) from effective date of MS4 Permit April 22, 2016	Program Lead: AMAFCA's Stormwater Quality Engineer Program Implementation: Engineering Intern

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
Not Included in NOI	35	From <u>Part I.C.2.b.(iii) - Table 1.a</u> , Develop (or modify an existing program- for prior permittees under NMS000101) and implement a program to reduce the discharge of bacteria in municipal stormwater contributed by areas within your MS4 served by on-site wastewater treatment systems.	<u>Part I.C.2.b.(iii) - Table 1.a</u> - As stated above, this is not applicable to AMAFCA. Through the IDDE Program, AMAFCA will continue coordination with ABCWUA, who will inform AMAFCA of any sanitary sewer overflows that impact AMAFCA facilities.	• As stated above, this is not applicable to AMAFCA. Through the IDDE Program, AMAFCA will continue coordination with ABCWUA, who will inform AMAFCA of any sanitary sewer overflows that impact AMAFCA facilities.	18 months (cooperative) from effective date of MS4 Permit June 22, 2016	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Engineering Intern
Not Included in NOI	36	From <u>Part I.C.2.b.(iii) - Table 1.a</u> , Review results to date from the Illicit Discharge Detection and Elimination program (see Part I.D.5.e) and modify as necessary to prioritize the detection and elimination of discharges contributing bacteria to the MS4.	<u>Part I.C.2.b.(iii) - Table 1.a</u> - AMAFCA will incorporate this Permit requirement into the IDDE program, refer to the SWMP - Table 6: Illicit Discharges and Improper Disposal - for additional information.	• AMAFCA will address this Permit activity in the IDDE Program, refer to the SWMP - Table 6: Illicit Discharges and Improper Disposal - for additional information.	18 months (cooperative) from effective date of MS4 Permit June 22, 2016	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Engineering Intern, GIS Manager
Not Included in NOI	37	<u>Part I.C.2.b.(iii) - Table 1.a</u> - Develop (or modify an existing program- for prior permittees under NMS000101) and implement a program to reduce the discharge of bacteria in municipal stormwater contributed by other significant source identified in the Illicit Discharge Detection and Elimination program (see Part I.D.5.e).	<u>Part I.C.2.b.(iii) - Table 1.a</u> - This requirement will be addressed in conjunction with AMAFCA's IDDE Program, refer to the SWMP Table 6: Illicit Discharges and Improper Disposal, for additional information. AMAFCA will review its IDDE Program results annually and identify illicit discharges (specific as well as general types of discharges and/or locations of discharges) that contributed bacteria to the MS4. Strategies will be developed to address these specific or general IDDEs. Development and implementation of strategies will depend on the IDDE program results.	• AMAFCA will review its IDDE Program results annually.	16 months (if alone) or 20 months (cooperative) from effective date of MS4 Permit April. 22, 2016 or August 22, 2016	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Engineering Intern, GIS Manager
Not Included in NOI	38	Include in the Annual Reports progress on program implementation and reducing the bacteria and updates their measurable goals as necessary. As required in <u>Part I.C.2.b.(i),(d)</u> , the Annual Report must include an analysis of how the selected BMPs have been effective in contributing to achieving the measurable goal and shall include graphic representation of pollutant trends, along with computations of annual percent reductions achieved from the baseline loads and comparisons with the target loads.	<u>Part I.C.2.b.(i),(d)</u> - The MRGSQT Outcomes Report will track the number of educational outreach opportunities conducted, list the number of people reached through the educational outreach program, and summarize the activities related to targeting pet waste sources as well as residential education targeting bacteria sources. This report is available upon request and AMAFCA plans to share this document on its website. In addition, if strategies are developed to address IDDEs found to contribute bacteria to the MS4, these will be reported in subsequent Annual Reports. AMAFCA will report annually on compliance monitoring to monitor and test for E. coli. This reporting will be done in accordance with Part III.A (Wet Weather Monitoring Program) of the MS4 Permit and will help with a water quality assessment of the overall watershed related to E. coli. Graphical representation of E. coli trends will also be completed annually.	• The MRGSQT Outcomes Report is available upon request and AMAFCA plans to share this document on its website. • Strategies developed to address IDDEs found to contribute bacteria to the MS4 will be reported in subsequent Annual Reports. AMAFCA will incorporate documentation by reference into the Annual Report and plans to document progress on the AMAFCA website. • AMAFCA will report annually on compliance monitoring to monitor and test for E. coli. This reporting will be done in accordance with Part III.A (Wet Weather Monitoring Program) of the MS4 Permit. • Graphical representation of E. coli trends will also be completed annually.	Progress reports submitted with subsequent annual reports, as applicable (Due Dec. 1).	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
	39	Discharges to Impaired Waters Without Approved TMDLs - Part I.C.2.b.(ii)				
Not Included in NOI	40	According to the requirements in <u>Part I.C.2.b.(iii)</u> , if the permittee discharges directly into an impaired water body without an approved TMDL, the permittee shall perform the following activities (described in sections below).	<p><u>Part I.C.2.b.(ii)</u> - The Rio Grande impairments are listed on the EPA Annual Report Summary Form, pages 1-2.</p> <p>The Tijeras Arroyo upstream of the Four Hills Bridge is impaired for nutrient/eutrophication. The Tijeras Arroyo upstream of the Four Hills Bridge is all privately owned land. AMAFCA's operation and maintenance authority and access to the Tijeras Arroyo terminate at the Four Hills Bridge. Therefore, there are no requirements in this SWMP to comply with the activities and schedules related to Impairment for Nutrients in Table 1.b in <u>Part I.C.2.b.(iii)</u>. AMAFCA does monitor for nutrients through its Wet Weather Monitoring Program, see Table 10 of the SWMP.</p>	<ul style="list-style-type: none"> • Impairment for Dissolved Oxygen is addressed in the Endangered Species Act (ESA) section - Part I.C.3. The SWMP section for Part I.C.3 describes the proposed plan and measurable goals. • Impairment for PCBs is addressed in Compliance with Water Quality Standards - PCBs - Part I.C.1.e. The SWMP section for Part I.C.1.e describes the proposed plan and measurable goals. • Impairment for Temperature is addressed in Compliance with Water Quality Standards - Temperature Part I.C.1.f. The SWMP section for Part I.C.1.f describes the proposed plan and measurable goals. • Compliance monitoring (Part III.A) includes Gross Alpha testing. Future assessment related to the impairment will be based on results of those samples. 		<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer
Not Included in NOI	41	<p><u>Part I.C.2.b.(ii).(a)</u> - The permittee shall:</p> <p>A. Determine whether the MS4 may be a source of the pollutant(s) of concern by referring to the CWA §303(d) list and then determining if discharges from the MS4 would be likely to contain the pollutant(s) of concern at levels of concern. The evaluation of CWA §303(d) list parameters should be carried out based on an analysis of existing data (e.g., IDDE Program) conducted within the permittee's jurisdiction.</p> <p>B. Ensure that the SWMP includes focused BMPs, and corresponding measurable goals, that the permittee will implement, to reduce, the discharge of pollutant(s) of concern that contribute to the impairment of the water body. Only applicable if the permittee determines that the MS4 may discharge the pollutant(s) of concern to an impaired water body without a TMDL. The SWMP submitted with the first Annual Report must include a detailed description of proposed controls to be implemented along with measurable goals.</p> <p>C. Amend the SWMP to include any BMPs to address the pollutant(s) of concern.</p>	<p><u>Part I.C.2.b.(ii).(a)</u> - Most of the impaired pollutants of concern are specifically addressed in other sections of the MS4 Program and therefore in other sections of the SWMP. Please refer to: Dissolved Oxygen and Endangered Species Act (ESA) section - Part I.C.3; PCBs are addressed in Compliance with Water Quality Standards - PCBs - Part I.C.1.e; and Temperature is addressed in Compliance with Water Quality Standards - Temperature - Part I.C.1.f.</p> <p>Compliance monitoring (Part III.A) includes Gross Alpha testing. The testing will allow AMAFCA to determine background level relative to stormwater discharges. Future assessment related to this impairment will be based on results of those samples.</p>	<ul style="list-style-type: none"> • Refer to other SWMP sections for: - Dissolved Oxygen is addressed in the Endangered Species Act (ESA) section - Part I.C.3. - PCBs are addressed in Compliance with Water Quality Standards - PCBs - Part I.C.1.e. - Temperature is addressed in Compliance with Water Quality Standards - Temperature - Part I.C.1.f. • Compliance monitoring (Part III.A) includes Gross Alpha testing. Future assessment and strategies related to this impairment will be based on results of the stormwater samples. 		<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
	42	Endangered Species Act (ESA) Requirements - Sediment Pollutant Load Reduction Strategy - Part I.C.3.b				
Not Included in NOI	43	According to the requirements in <u>Part I.C.3.b</u> , the permittee must develop, implement, and evaluate a sediment pollutant load reduction strategy to assess and reduce pollutant loads associated with sediment (e.g., metals, etc. adsorbed to or traveling with sediment, as opposed to clean sediment) into the receiving waters of the Rio Grande. The strategy must include the following elements (see sections below):	<u>Part I.C.3.b</u> - AMAFCA's proposed plan for compliance with the Permit activities are described in the sections below.	AMAFCA's measurable goals for compliance with the Permit activities are described in the sections below.	See specific Permit activity schedules below.	See specific Permit activity below.
Not Included in NOI	44	<u>Part I.C.3.b.(i)</u> - Sediment Assessment: The permittee must identify and investigate areas within its jurisdiction that may be contributing excessive levels (e.g., levels that may contribute to exceedance of applicable Water Quality Standards) of pollutants in sediments to the receiving waters of the Rio Grande as a result of stormwater discharges. The permittee must identify structural elements, natural or man-made topo-graphical and geographical formations, MS4 operations activities, and areas indicated as potential sources of sediments and pollutants in the receiving waters of the Rio Grande. At the time of assessment, the permittee shall record any observed erosion of soil or sediment along ephemeral channels, arroyos, or stream banks, noting the scouring or sedimentation in streams. The assessment should be made using available data from federal, state, or local studies supplemented as necessary with collection of additional data. The permittee must describe, in the first Annual Report, all standard operating procedures, quality assurance plans to assure that accurate data are collected, summarized, evaluated and reported.	<u>Part I.C.3.b.(i)</u> - All AMAFCA projects are regional flood control or water quality projects. Stormwater runoff from other MS4s enter AMAFCA facilities, which function as regional flood control facilities and also function as BMPs to capture sediment from stormwater before the stormwater continues to the Rio Grande. In the MRG MS4, AMAFCA is not adversely contributing to the sediment pollutant load, but rather functioning to capture the sediment pollutant load generated throughout the watershed by MS4s contributing runoff to AMAFCA facilities. A large portion of AMAFCA's routine activities include sediment removal from its facilities. AMAFCA has implemented a crew tracking system to measure the sediment removal quantities at all of its facilities. The data collected will be used by AMAFCA for the required MS4 Sediment Assessment. As part of AMAFCA's regular O&M activities, AMAFCA will continue the sediment assessment phase by tracking and estimating the volume of sediment removed from their stormwater facilities annually. The tracking of this data will continue and will be valuable to AMAFCA as it applies to this program and to future planning activities. In addition, AMAFCA will continue a rainfall and runoff monitoring program to quantitatively relate sediment removal to rainfall quantity, location, and runoff volume. AMAFCA has standard operating procedures (SOPs) related to operation and maintenance and a scheduling spreadsheet for inspections. These SOPs and procedures ensure that AMAFCA has accurate data related to sediment removal activities.	<ul style="list-style-type: none"> AMAFCA's facilities function as BMPs for sediment removal. AMAFCA's O&M activities, which include sediment removal, will be scheduled, tracked, and evaluated for the Sediment Assessment requirement for this Permit activity. AMAFCA will continue using a crew tracking system to measure the sediment removal quantities at all of its facilities and use this information for the Sediment Assessment. AMAFCA will continue to utilize GIS to view this information to better understand the watershed. AMAFCA will continue with a rainfall and runoff monitoring program to continue to quantitatively relate sediment removal to rainfall quantity, location, and runoff volume. 	<p>No Permit required schedule. Progress Report for the entire Sediment Pollutant Load Reduction Strategy to be submitted with the fifth Annual Report. Dec. 1, 2019</p> <p>Interim - Dec. 1, 2016 - AMAFCA has a procedure in place and has begun the tracking elements for this Sediment Assessment. AMAFCA will evaluate assessment program and modify, as needed, annually, to stay on schedule for the Progress Report due Dec. 1, 2019.</p>	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation:</u> Engineering Intern, AMAFCA Maintenance Crew, Field Engineer, Maintenance Superintendent</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
Not Included in NOI	45	<p><u>Part I.C.3.b.(ii)</u> - Estimate Baseline Loading: Based on the results of the sediment pollutants assessment required in Part I.C.3.b.(i) above, the permittee must provide estimates of baseline total sediment loading and relative potential for contamination of those sediments by urban activities for drainage areas, sub-watersheds, Impervious Areas (IAs), and/or Directly Connected Impervious Area (DCIAs) draining directly to a surface waterbody or other feature used to convey waters of the United States. Sediment loads may be provided for targeted areas in the entire Middle Rio Grande Watershed using an individual or cooperative approach. Any data available and/or preliminary numeric modeling results may be used in estimating loads.</p>	<p><u>Part I.C.3.b.(ii)</u> - In 2016, the COA, with cooperation from AMAFCA and area MS4s, completed an initial sediment assessment, "City of Albuquerque 2016 Sediment Assessment". This initial study assisted in establishing the baseline for the sediment assessment. In FY 2019, AMAFCA cooperated with Bernalillo County, who led the effort for the watershed to complete the estimated baseline sediment loading evaluation. Sediment loads are provided for targeted areas in the entire Middle Rio Grande Watershed using a cooperative approach. The "Progress Evaluation Report for the Sediment Pollutant Load Reduction Strategy" report, June 25, 2019 summarizes the sediment loading evaluation at five main outfalls into the Rio Grande. The data AMAFCA collected in the Sediment Assessment was used for estimating baseline sediment loading to its facilities. AMAFCA will review the "Progress Evaluation Report for the Sediment Pollutant Load Reduction Strategy" report and discuss the findings with the watershed MS4s. The results of this study may be used to guide the overall program plans and goals.</p> <p>Rainfall events and generated runoff are related to loading (sediment transport). AMAFCA has developed and began implementation of a rainfall and runoff monitoring program to begin to quantitatively tie sediment quantities reaching AMAFCA facilities (sediment removal volumes) to rainfall quantity, location, and runoff volumes.</p>	<ul style="list-style-type: none"> • AMAFCA will review the "Progress Evaluation Report for the Sediment Pollutant Load Reduction Strategy" report and discuss the findings with the watershed MS4s. The results of this study may be used to guide the overall program plans and goals. Updates to the Sediment Pollutant Load Reduction Strategy will be implemented, as applicable. • AMAFCA will continue with the development and implementation of a rainfall and runoff monitoring program to begin to quantitatively tie sediment removal to rainfall quantity, location, and runoff volume. 	<p>No Permit required schedule. Interim reporting on progress required annually. Progress Report for the entire Sediment Pollutant Load Reduction Strategy to be submitted with the fifth Annual Report.</p> <p>Dec. 1, 2019</p>	<p><u>Program Lead</u>: AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u>: Engineering Intern</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
Not Included in NOI	46	<u>Part I.C.3.b.(iii)</u> - Targeted Controls: Include a detailed description of all proposed targeted controls and BMPs that will be implemented to reduce sediment pollutant loads, calculated in Part I.C.3.b.(ii) above, during the next ten (10) years of permit issuance. For each targeted control, the permittee must include interim measurable goals (e.g., interim sediment pollutant load reductions) and an implementation and maintenance schedule, including interim milestones, for each control measure, and as appropriate, the months and years in which the MS4 will undertake the required actions. Any data available and/or preliminary numeric modeling results may be used in establishing the targeted controls, BMPs, and interim measurable goals. The permittee must prioritize pollutant load reduction efforts and target areas (e. g. drainage areas, sub watersheds, IAs, DCIAs) that generate the highest annual average pollutant loads.	<u>Part I.C.3.b.(iii)</u> - AMAFCA facilities function as regional flood control facilities as well as BMPs to remove sediment from stormwater before the stormwater reaches the Rio Grande. In the MRG MS4, AMAFCA is not adversely contributing to the sediment pollutant load, but rather functioning to capture the sediment pollutant load generated throughout the watershed by MS4s contributing runoff to AMAFCA facilities. As such, AMAFCA does not want to reduce the sediment loads but rather implement targeted controls to increase the capture of sediment in its facilities. The completed analysis of the Sediment Assessment and Estimated Baseline Loading will be used by AMAFCA to improve their program to target and prioritize sediment removal throughout the watershed. AMAFCA will continue to estimate the annual volume of sediment removed from each control facility. The AMAFCA operations and maintenance crew and subcontractors track the volume of floatables, sediment, trash, and debris removed from AMAFCA facilities on a daily basis. This tracking procedure includes the location of removal by facility and watershed. AMAFCA will continue to utilize the 2017 updated, cooperative waste characterization study, updating the "AMAFCA/Albuquerque MS4 Floatable and Gross Pollutant Study" conducted in 2005, to assist with determining needed controls and BMPs that may be implemented to reduce sediment pollutant loads. AMAFCA will continue analyzing, planning, and constructing needed sediment control BMPs. The AMAFCA Project Schedule process may be utilized in part for identifying, ranking, and planning area BMPs. AMAFCA's Mutt Mitt stations program will continue as a targeted BMP to reduce pollutants (specifically E. coli) present in sediment within the MS4.	<ul style="list-style-type: none"> • AMAFCA will review the "Progress Evaluation Report for the Sediment Pollutant Load Reduction Strategy" report and discuss the findings with the watershed MS4s. The results of this study may be used to guide the overall program plans and goals. Updates to the Sediment Pollutant Load Reduction Strategy will be implemented, as applicable. • AMAFCA will continue to estimate the annual volume of sediment removed from each control facility. The AMAFCA operations and maintenance crew and subcontractors track the volume of floatables, sediment, trash, and debris removed from AMAFCA facilities on a daily basis. This tracking procedure includes the location of removal by facility and watershed. • AMAFCA will continue utilizing the updated, cooperative waste characterization study in the watershed to assist with determining needed controls and BMPs that may be implemented to reduce sediment pollutant loads. • AMAFCA will continue analyzing, planning, and constructing needed sediment control BMPs. The AMAFCA Project Schedule process may be utilized in part for identifying, ranking, and planning area BMPs. • AMAFCA will continue its Mutt Mitt program focusing on reducing pollutants (specifically E. coli) present in sediment within the MS4. 	No Permit required schedule. Interim reporting on progress required annually. Progress Report for the entire Sediment Pollutant Load Reduction Strategy to be submitted with the fifth Annual Report. Dec. 1, 2019	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, AMAFCA Maintenance Crew, Drainage Engineer, Field Engineer, Maintenance Superintendent
Not Included in NOI	47	<u>Part I.C.3.b.(iv)</u> - Monitoring and Interim Reporting: The permittee shall monitor or assess progress in achieving interim measurable goals and determining the effectiveness of BMPs, and shall include documentation of this monitoring or assessment in the SWMP and Annual Reports. In addition, the SWMP must include methods to be used. This program element may be coordinated with the monitoring required in Part III.A.	<u>Part I.C.3.b.(iv)</u> - AMAFCA will annually assess progress for this program. AMAFCA will monitor the volume of sediment captured by each of its facilities by measuring the volume of sediment removed from each facility. Documentation of this monitoring will be done using the tracking spreadsheet and procedure. AMAFCA will incorporate documentation by reference into the Annual Report and plans to document progress on the AMAFCA website. In addition, as mentioned above, AMAFCA will use the "Progress Evaluation Report for the Sediment Pollutant Load Reduction Strategy" report to guide the overall program plans and goals. Related monitoring also occurs through the Levelogger program, monitoring rainfall events and generated runoff. Monitoring and assessment will be considered during the development of future program plans and goals.	<ul style="list-style-type: none"> • AMAFCA will incorporate documentation by reference into the Annual Report. • Documentation of volume of sediment removed will continue to be done using the crew tracking spreadsheet and procedure. • AMAFCA Levelogger information are available upon request and AMAFCA plans to share related documents on its website. 	Update as necessary for SWMP and progress reports submitted with subsequent annual reports, as applicable.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, AMAFCA Maintenance Crew, Field Engineer, Maintenance Superintendent

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
Not Included in NOI	48	<p><u>Part I.C.3.b.(v)</u> - Progress Evaluation and Reporting: The permittee must assess the overall success of the Sediment Pollutant Load Reduction Strategy and document both direct and indirect measurements of program effectiveness in a Progress Report to be submitted with the fifth Annual Report. Data must be analyzed, interpreted, and reported so that results can be applied to such purposes as documenting effectiveness of the BMPs and compliance with the ESA requirements specified in Part I.C.3.b. The Progress Report must include:</p> <p>(a) A list of species likely to be within the action area;</p> <p>(b) Type and number of structural BMPs installed;</p> <p>(c) Evaluation of pollutant source reduction effects;</p> <p>(d) Any recommendation based on program evaluation;</p> <p>(e) Description of how the interim sediment load reduction goals established in Part I.C.3.b.(iii) were achieved; and</p> <p>(f) Future planning activities needed to achieve increase of sediment load reduction required in Part I.C.3.d.(iii).</p>	<p><u>Part I.C.3.b.(v)</u> - AMAFCA facilities function as regional flood control facilities as well as BMPs to remove sediment from stormwater before the stormwater reaches the Rio Grande. In the MRG MS4, AMAFCA is not adversely contributing to the sediment pollutant load, but rather functioning to capture the sediment pollutant load generated throughout the watershed by MS4s contributing runoff to AMAFCA facilities. AMAFCA's goal is to implement targeted controls to increase the capture of sediment in its facilities rather than reducing sediment loads. AMAFCA worked cooperatively with Bernalillo County, City of Albuquerque, and SSCAFCA to complete this MS4 Permit requirement. The Progress Report on the Sediment Pollutant Load Reduction Strategy. This Progress report meets the MS4 Permit requirements, including:</p> <p>(a) A list of species likely to be within the action area;</p> <p>(b) Type and number of structural BMPs installed;</p> <p>(c) Evaluation of pollutant source reduction effects;</p> <p>(d) Any recommendation based on program evaluation;</p> <p>(e) Description of how the interim sediment load reduction goals established in Part I.C.3.b.(iii) were achieved; and</p> <p>(f) Future planning activities needed to achieve increase of sediment load reduction required in Part I.C.3.d.(iii).</p> <p>Related to the elements required by this Progress report, AMAFCA will continue to 1) maintain a cumulative list of AMAFCA's retrofit BMPs and 2) may utilize the AMAFCA Project Schedule process in part for identifying, ranking, and planning area BMPs to meet recommendations from this program evaluation.</p>	<ul style="list-style-type: none"> • AMAFCA has completed this report and provided this to EPA with the FY 2019 Annual Report, December 1, 2019, a Progress Report on the Sediment Pollutant Load Reduction Strategy. AMAFCA cooperated with Bernalillo County, who led the effort for the watershed to complete the estimated baseline sediment loading. The City of Albuquerque and SSCAFCA also cooperated on this watershed wide strategy. • Related to requirement (c), AMAFCA will continue to maintain a cumulative list of AMAFCA's retrofit BMPs. AMAFCA will incorporate documentation by reference into the Annual Report and plans to document progress on the AMAFCA website. • Related to requirement (d) AMAFCA's Project Schedule process may be utilized in part for identifying, ranking, and planning area BMPs to meet recommendations from this program evaluation. 	Progress Report to be submitted with the fifth Annual Report Dec. 1, 2019	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation:</u> Engineering Intern</p>
Not Included in NOI	49	<p><u>Part I.C.3.b.(vi)</u> - Critical Habitat: Verify that the installation of stormwater BMPs will not occur in or adversely affect currently listed endangered or threatened species critical habitat by reviewing the activities and locations of stormwater BMP installation within the location of critical habitat of currently listed endangered or threatened species at the FWS website http://criticalhabitat.fws.gov/crithab/.</p>	<p><u>Part I.C.3.b.(vi)</u> - AMAFCA considers critical habitat for all of its projects, working closely with the USFWS and USACE, as required, and will continue this practice related to any BMPs installed related to sediment capture and removal.</p>	<ul style="list-style-type: none"> • AMAFCA will continue its practice of coordination with the USFWS and USACE, as required, related to AMAFCA's facility construction projects. 	No Permit required schedule. Ongoing requirement of the MS4 Permit.	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation:</u> Engineering Intern</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
	50	Part I.D.5 - Stormwater Management Plan (SWMP) Control Measures				
	51	TABLE 2: Construction Site Stormwater Runoff Control - Part I.D.5.a				
See NOI Sections Below	52	<u>Part I.D.5.a.(i)</u> The permittee shall develop, revise, implement, and enforce a program to reduce pollutants in any stormwater runoff to the MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of stormwater discharges from construction activity disturbing less than one acre must be included in the program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more. Permittees previously covered under permit NMS000101 or NMR040000 must continue existing programs, updating as necessary, to comply with the requirements of this permit. (Note: Highway Departments and Flood Control Authorities may only apply the construction site stormwater management program to the permittee's own construction projects).	<u>Part I.D.5.a.(i)</u> - AMAFCA does not have jurisdiction over COA or Bernalillo County departments responsible for planning, review, permitting, or approval of public and private construction activities. However, AMAFCA does have jurisdiction over AMAFCA construction projects. Therefore, AMAFCA's Construction Site Stormwater Runoff Control Program addresses stormwater management during construction of AMAFCA projects that result in a land disturbance of greater than or equal to one acre, specifically when the construction contract is under AMAFCA. Coordination will continue to occur between AMAFCA's Stormwater Quality Engineer, Project Manager, Development Review Engineer, Drainage Engineer, Field Engineer, and Executive Engineer to ensure that the Program controls erosion and maintains sediment on site.	<ul style="list-style-type: none"> Coordinate the Construction Site Stormwater Runoff Control Program requirements (as detailed in the Program and in sections below) with AMAFCA's Stormwater Quality Engineer, Project Manager, Development Review Engineer, Drainage Engineer, Field Engineer, and Executive Engineer to ensure that the Program controls erosion and maintains sediment on site for qualifying AMAFCA construction projects, as required under the Construction General Permit (CGP). 	10 months from effective date of MS4 Permit Oct. 22, 2015	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, Development Review Engineer, Drainage Engineer, Field Engineer
1.1	53	Development of an ordinance or other regulatory mechanism as required in <u>Part I.D.5.a.(ii)(a)</u> .	<u>Part I.D.5.a.(ii)(a)</u> - To the extent permitted by law, AMAFCA will comply with the requirements of this section. As applicable, AMAFCA will begin inserting MS4 Permit elements into construction contracts to provide AMAFCA with an enforceable contract mechanism. AMAFCA will also continue to work with the cooperative MS4 Technical Advisory Group (TAG) and other agencies to discuss and help develop regulatory mechanisms. Except for special circumstances, AMAFCA's regular maintenance activities do not disturb more than 5 acres at a time.	<ul style="list-style-type: none"> AMAFCA will begin inserting MS4 Permit elements into construction contracts to provide AMAFCA with an improved enforceable contract mechanism. AMAFCA will continue to work with the MS4 TAG and other agencies to discuss and help develop regulatory mechanisms. Except for special circumstances, AMAFCA's regular maintenance activities will not disturb more than 5 acres at a time. 	18 months (cooperative) from effective date of MS4 Permit June 22, 2016	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, Development Review Engineer, Drainage Engineer, Field Engineer

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
1.2	54	<p>Develop requirements and procedures as required in Part I.D.5.a.(ii)(b) through Part I.D.5.a.(ii)(h). These Permit sections include requirements for AMAFCA to implement and enforce requirements for construction site operators to:</p> <p><u>Part I.D.5.a.(ii)(b)</u> - implement appropriate erosion and sediment control BMPs;</p> <p><u>Part I.D.5.a.(ii)(c)</u> - control waste at the construction site that may cause adverse impacts to water quality;</p> <p><u>Part I.D.5.a.(ii)(d)</u> - Procedures for site plan review which incorporate consideration of potential water quality impacts;</p> <p><u>Part I.D.5.a.(ii)(e)</u> - Procedures for receipt and consideration of information submitted by the public;</p> <p><u>Part I.D.5.a.(ii)(f)</u> - Procedures for site inspection (during construction) and enforcement of control measures, including provisions to ensure proper construction, operation, maintenance, and repair.</p>	<p><u>Part I.D.5.a.(ii)(b)</u> - As part of AMAFCA's Program, AMAFCA engineers will continue to review all site plans and the SWPPPs to ensure implementation of appropriate BMPs and consistency with federal, state, and local sediment and erosion control requirements for AMAFCA projects. Pre-construction meetings will be held prior to beginning construction and SWPPP BMPs will be reviewed and discussed.</p> <p><u>Part I.D.5.a.(ii)(c)</u> - AMAFCA ensures control of waste at construction sites during the SWPPP review, in accordance with the MS4 and CGP requirements.</p> <p><u>Part I.D.5.a.(ii)(d)</u> - In a cooperative effort with COA and Bernalillo County, the AMAFCA Development Review Engineer reviews private development that has a connection to AMAFCA facilities for projects disturbing at least one (1) acre. This review includes stormwater conveyance, water quality, and erosion control. In addition, AMAFCA staff performs and will continue to perform incremental reviews of all AMAFCA projects during design to assure quality control and design efficiency.</p> <p><u>Part I.D.5.a.(ii)(e)</u> - AMAFCA will post a contact phone number at all required construction sites to ensure the public can contact AMAFCA with information.</p> <p><u>Part I.D.5.a.(ii)(f)</u> - AMAFCA has procedures for construction site inspections of control measures to ensure compliance with the Construction General Permit (CGP). AMAFCA also has procedures in place to ensure site stabilization after NOT is filed.</p>	<ul style="list-style-type: none"> Review site plans and the SWPPPs (using the EPA SWPPP checklist) for AMAFCA projects disturbing at least one (1) acre in order to consider potential water quality impacts and ensure consistency with federal, state, and local sediment and erosion control requirements. Conduct pre-construction meetings on AMAFCA construction projects disturbing at least one (1) acre prior to beginning earth-disturbing activities in order to discuss the SWPPP and BMPs. SWPPP review will include ensuring the plans addresses control of waste at construction sites for AMAFCA projects. In a cooperative effort with COA and Bernalillo County, the AMAFCA Development Review Engineer will review submitted private development that has a connection to AMAFCA facilities for projects disturbing at least one (1) acre. Review may include stormwater conveyance, water quality, and erosion control. AMAFCA will post a contact phone number at all required construction sites. AMAFCA will continue to utilize construction inspection procedures for control measures to ensure compliance with the Construction General Permit (CGP). 	<p>10 months from effective date of MS4 Permit</p> <p>Oct. 22, 2015</p>	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation:</u> Engineering Intern, Development Review Engineer, Drainage Engineer, Field Engineer, Project Managers</p>
	55	<p>Continued...Develop requirements and procedures as required in Part I.D.5.a.(ii)(b) through Part I.D.5.a.(ii)(h).</p> <p><u>Part I.D.5.a.(ii)(g)</u> - to educate and train permittee personnel and developers, construction site operators, contractors and supporting personnel; and</p> <p><u>Part I.D.5.a.(ii)(h)</u> - for keeping records of and tracking all regulated construction activities within the MS4 - site reviews, inspections, inspection reports, warning letters and other enforcement documents. A summary of the number and frequency of site reviews, inspections (including inspector's checklist for oversight of sediment and erosion controls and proper disposal of construction wastes) and enforcement activities that are conducted annually and cumulatively during the permit term shall be included in each Annual Report.</p>	<p><u>Part I.D.5.a.(ii)(g)</u> - AMAFCA will provide MS4 construction site inspection training for its staff and invite other agencies to attend trainings, when possible. In addition, construction site SWPPPs will continue to be discussed regularly by AMAFCA personnel.</p> <p><u>Part I.D.5.a.(ii)(h)</u> - AMAFCA will maintain records of all AMAFCA-led projects disturbing at least one (1) acre within its rights-of-way. This will include AMAFCA's Construction Site Stormwater Runoff Control Program records, including NOIs, NOI tracking, inspection reports, non-conformance documents, and training documents. AMAFCA will maintain its MS4 Strategies and Procedures Notebook. AMAFCA's license agreements relative to CGP compliance for non-AMAFCA projects that occur within its rights-of-way are the responsibility of the licensee.</p>	<ul style="list-style-type: none"> AMAFCA will continue to provide MS4 construction site inspection training for its staff and invite other agencies responsible for construction projects. In addition, construction site SWPPPs will continue to be discussed at weekly staff meetings, included in daily reports by field personnel, and discussed at AMAFCA Board meetings. AMAFCA will maintain records of all construction projects disturbing at least one (1) acre within its rights-of-way that do not qualify for a Low Erosivity Waiver (LEW). AMAFCA will maintain a tracking spreadsheet for the Construction Site Stormwater Runoff Control Program elements for AMAFCA-led projects. 	<p>10 months from effective date of MS4 Permit</p> <p>Oct. 22, 2015</p>	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation:</u> Engineering Intern, Development Review Engineer, Drainage Engineer, Field Engineer, Project Managers</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
1.3	56	<u>Part I.D.5.a.(iii).</u> Annually conduct site inspections of 100 percent of all construction projects cumulatively disturbing one (1) or more acres as required in Part I.D.5.a.(iii).	<u>Part I.D.5.a.(iii)</u> - As part of AMAFCA's Program, AMAFCA staff will continue to perform field inspections of AMAFCA construction projects which disturb at least one (1) acre. At a minimum, each project will be inspected once after filing the NOI (including follow-up inspections for any nonconformances) and at the NOT. An inspection form has been developed and will be used for all inspections. Should the contractor fail to operate, maintain and repair the BMPs and control measures, AMAFCA staff have the contractual authority to temporarily suspend work, withhold/stop payment, or terminate the contract should such issues go uncorrected. AMAFCA's license agreements for non-AMAFCA projects that occur within its rights-of-way are not inspected by AMAFCA and are the responsibility of the licensee. As AMAFCA partners with other MS4s, such as COA, UNM, or ExpoNM on construction projects, AMAFCA will continue to coordinate with those cooperating MS4s in order to assign responsibility of conducting site inspections.	<ul style="list-style-type: none"> AMAFCA will complete the inspections per the Construction Site Stormwater Runoff Control Program Plan for 100% of the active construction sites under contract by AMAFCA which disturb at least one (1) acre. AMAFCA will provide each contractor with a rain gage for each construction site to facilitate construction inspections. AMAFCA's Stormwater Quality Engineer will track all MS4 inspections using the NOI Construction Inspection Tracking spreadsheet. AMAFCA will maintain copies of the completed MS4 construction inspection forms. AMAFCA will continue membership and involvement in the cooperative MS4 TAG, which will facilitate cooperation and coordination with other MS4s in the Middle Rio Grande. 	10 months from effective date of MS4 Permit Oct. 22, 2015	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, Development Review Engineer, Drainage Engineer, Field Engineer
1.4	57	<u>Part I.D.5.a.(iv).</u> Coordinate with all departments and boards with jurisdiction over the planning, review, permitting, or approval of public and private construction projects/activities within the permit area as required in Part I.D.5.a.(iv). Planning documents include, but are not limited to: comprehensive or master plans, subdivision ordinances, general land use plan, zoning code, transportation master plan, specific area plans, such as sector plan, site area plans, corridor plans, or unified development ordinances.	<p><u>Part I.D.5.a.(iv)</u> - AMAFCA does not have jurisdiction over the planning, review, permitting, or approval of non-AMAFCA public and private construction activities. Therefore, AMAFCA's program is limited to AMAFCA-owned properties. Regular coordination among AMAFCA staff, as well as with Board members, occurs and will continue.</p> <p>In a cooperative effort with COA and Bernalillo County, the AMAFCA Development Review Engineer will continue to coordinate with and to review public and private development that has a connection to AMAFCA facilities for projects disturbing at least one (1) acre.</p>	<ul style="list-style-type: none"> AMAFCA will continue regular coordination amongst AMAFCA engineering staff and Board members to verify that BMPs are in place to control erosion during construction on AMAFCA-owned properties. AMAFCA will continue to meet monthly with the Board and will continue to seek Board approval for jointly funded water quality projects. In a cooperative effort with COA and Bernalillo County, the AMAFCA Development Review Engineer reviews submitted public and private development that has a connection to AMAFCA facilities for projects disturbing at least one (1) acre. These reviews may include stormwater conveyance, water quality, and erosion control. 	10 months from effective date of MS4 Permit Oct. 22, 2015	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, Development Review Engineer, Drainage Engineer, Field Engineer, Project Managers

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
1.5	58	Evaluation of GI/LID/Sustainable practices in site plan reviews as required in <u>Part I.D.5.a.(v)</u> . The site plan review must include an evaluation of opportunities for use of GI/LID/ Sustainable practices and when the opportunity exists, encourage project proponents to incorporate such practices into the site design to mimic the pre-development hydrology of the previously undeveloped site. For purposes of this permit, pre-development hydrology shall be met according to Part I.D.5.b of this Permit (consistent with any limitations on that capture). Include a reporting requirement of the number of plans that had opportunities to implement these practices and how many incorporated these practices.	<u>Part I.D.5.a.(v)</u> - AMAFCA does not have jurisdiction over site plan reviews of public and private construction activities, and AMAFCA does not program any private development type projects. AMAFCA ultimately has no authority to accept or reject public and private development projects. AMAFCA will continue to encourage use of sustainable practices during the review phase of projects within AMAFCA's rights-of-way and turn-key projects that AMAFCA will take over for operation and maintenance after construction. AMAFCA will encourage an evaluation of sustainable GI/LID practice opportunities within the watershed. The reporting requirement for the number of plans that AMAFCA reviews, typically because of a connection to an AMAFCA facility, that had opportunities to implement these practices will be reported annually. Because of lack of jurisdictional authority, AMAFCA is typically not told how many improvements were implemented. Therefore the number of improvements implemented will not be reported in the AMAFCA MS4 Annual Report.	<ul style="list-style-type: none"> • AMAFCA will continue to encourage use of sustainable practices during the review phase of projects. • AMAFCA will annually report the number of plans that were reviewed within AMAFCA's rights-of-way and turn-key projects that AMAFCA will take over for operation and maintenance after construction that had opportunities to implement GI/LID/Sustainable practices. 	14 months (cooperative) from effective date of MS4 Permit February 22, 2016	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, Development Review Engineer
Not Included in NOI	59	Update the SWMP document and annual report as required in Part I.D.5.a.(vi) and in Part I.D.5.a.(vii). <u>Part I.D.5.a.(vi)</u> The permittee must include in the SWMP a description of the mechanism(s) that will be utilized to comply with each of the elements required in Part I.D.5.a.(i) throughout Part I.D.5.a.(v), including description of each individual BMP (both structural or non-structural) or source control measures and its corresponding measurable goal.	<u>Part I.D.5.a.(vi)</u> - The above sections of the SWMP describe the mechanism(s) AMAFCA utilizes to comply with each of the elements required in Part I.D.5.a.(i) throughout Part I.D.5.a.(v) and the corresponding measurable goal(s). AMAFCA will annually evaluate and revise the Construction Site Stormwater Runoff Control Program elements, as necessary, to ensure that AMAFCA's Program meets the MS4 Permit requirements.	<ul style="list-style-type: none"> • Evaluate and revise the Construction Site Stormwater Runoff Control Program, as necessary, to ensure that AMAFCA's Program meets the MS4 Permit requirements. • Update the SWMP, as necessary. 	Update as necessary for SWMP.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
Not Included in NOI	60	Update the SWMP document and annual report as required in Part I.D.5.a.(vi) and in Part I.D.5.a.(vii). <u>Part I.D.5.a.(vii)</u> - The permittee shall assess the overall success of the program, and document the program effectiveness in the Annual Report. The permittee must include in each Annual Report: <u>Part I.D.5.a.(vii)(a)</u> - A summary of the frequency of site reviews, inspections and enforcement activities that are conducted annually and cumulatively during the permit term. <u>Part I.D.5.a.(vii)(b)</u> - The number of plans that had the opportunity to implement GI/LID/Sustainable practices and how many incorporated the practices. check annual report - is this on the form?	<u>Part I.D.5.a.(vii)</u> - AMAFCA will assess the overall success of the program, and document the program effectiveness in the Annual Report. <u>Part I.D.5.a.(vii)(a)</u> - AMAFCA will include in each Annual Report a summary of the number and frequency of site reviews and inspections activities that are conducted annually and cumulatively during the permit term. <u>Part I.D.5.a.(vii)(b)</u> - AMAFCA will include the number of plans that had the opportunity to implement GI/LID/Sustainable practices from the plans that were reviewed within AMAFCA's rights-of-way and turn-key projects that AMAFCA will take over for operation and maintenance after construction. AMAFCA ultimately lacks jurisdictional authority to accept public and private development projects.	<ul style="list-style-type: none"> • Included in each Annual Report will be a summary of the number and frequency of construction site reviews and inspection activities that are conducted annually and cumulatively during the Permit term. • Included in each Annual Report will be a summary of the plans that had the opportunity to implement GI/LID/Sustainable practices from the plans that were reviewed within AMAFCA's rights-of-way and turn-key projects that AMAFCA will take over for operation and maintenance after construction. This documentation is included above. 	Update as necessary for SWMP and information submitted with subsequent annual reports, as applicable.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, Development Review Engineer, Drainage Engineer, Field Engineer
1.6	61	Enhance the program to include the elements in Part I.D.5.a.(viii) through Part I.D.5.a.(x). These include: <u>Part I.D.5.a.(viii)</u> -Use of stormwater educational materials; <u>Part I.D.5.a.(ix)</u> - Develop or update existing construction handbooks; and <u>Part I.D.5.a.(x)</u> - construction inspections may be carried out in conjunction with other inspections and use a screening prioritization process.	<u>Part I.D.5.a.(viii)</u> - AMAFCA will continue to use stormwater educational materials, either developed locally or provided by EPA, NMED, environmental groups, public interest groups, trade organizations, and/or other MS4s. AMAFCA will continue to host training cooperative sessions with the watershed MS4s. <u>Part I.D.5.a.(ix)</u> - AMAFCA, along with other MS4s, provided external review to NMDOT on their 2020 update of the National Pollutant Discharge Elimination System Manual, Stormwater Management Guidelines for Construction, MS4 and Industrial Activities. <u>Part I.D.5.a.(x)</u> - AMAFCA will continue to incorporate a screening prioritization process for construction inspections.	<ul style="list-style-type: none"> • The MRGSQT Outcomes Report will summarize the activities where educational materials were dispersed and shared with the public. This report is available upon request and AMAFCA plans to share this document on its website. • AMAFCA will explore opportunities for training cooperative sessions held with the watershed MS4s during the reporting period. • AMAFCA will follow procedures, as applicable, outlined in the 2020 update of the National Pollutant Discharge Elimination System Manual, Stormwater Management Guidelines for Construction, MS4 and Industrial Activities. • AMAFCA will continue to incorporate a screening prioritization process for construction inspections. 	Update as necessary for SWMP and information submitted with subsequent annual reports, as applicable.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, Development Review Engineer, Drainage Engineer, Field Engineer
1.7	62	Item from MS4 Permit NOI. Describe other proposed activities to address the Post-Construction Stormwater Management in New Development and Redevelopment Measure.	AMAFCA will continue to utilize the Annual Report and SWMP revision process as a means to perform a self-audit with the goal to improve its MS4 Programs. AMAFCA will maintain and update, as necessary, its MS4 Strategies and Procedures Notebook for this MS4 Program.	<ul style="list-style-type: none"> • AMAFCA will document progress made, if any, related to the Annual Report and SWMP revision process as a means to perform a self-audit on the MS4 Program elements. • AMAFCA will maintain and update, as necessary, its MS4 Strategies and Procedures Notebook. 	No Permit required schedule. Ongoing requirement of the MS4 Permit.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
	63	TABLE 3: Post-Construction Stormwater Management in New Development and Redevelopment- Part I.D.5.b				
See NOI Sections Below	64	<u>Part I.D.5.b.(i)</u> The permittee must develop, revise, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the MS4. The program must ensure that controls are in place that would prevent or minimize water quality impacts. Permittees previously covered under NMS000101 or NMR040000 must continue existing programs, updating as necessary, to comply with the requirements of this permit. (Note: Highway Departments and Flood Control Authorities may only apply the post-construction stormwater management program to the permittee's own construction projects).	<u>Part I.D.5.b.(i)</u> - All AMAFCA projects are regional flood control or water quality projects. AMAFCA does not have jurisdiction over private or public (non-AMAFCA) development or redevelopment projects - this responsibility lies with COA, NMDOT, or Bernalillo County. AMAFCA facilities receive stormwater after it flows through new development and redevelopment. As a result, some permit activities in this section do not apply to AMAFCA. AMAFCA's routine operation & maintenance (O&M) activities address post-construction stormwater management at all AMAFCA facilities.	• Coordinate O&M activities with AMAFCA's Stormwater Quality Engineer, Project Manager, Development Review Engineer, Drainage Engineer, GIS Manager, Field Engineer, and Executive Engineer.	See specific Permit activity schedules below.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, Development Review Engineer, Drainage Engineer, Field Engineer, GIS Manager
2.1	65	Development of strategies as required in <u>Part I.D.5.b.(iii).(a)</u> . Strategies which include a combination of structural and/or non-structural BMPs to control pollutants in stormwater runoff.	<u>Part I.D.5.b.(iii).(a)</u> - All AMAFCA projects are regional flood control or stormwater quality projects - functioning as BMPs. AMAFCA will continue to include both structural and non-structural BMPs to control pollutants in stormwater runoff from AMAFCA owned facilities. AMAFCA may continue to coordinate with watershed MS4s and other entities within its jurisdiction to discuss areas requiring drainage and water quality improvements, project priorities, and multi-agency funding opportunities. As part of the development of the AMAFCA Project Schedule, a system review will be completed. AMAFCA will publish projects, including schedule and cost sharing, in the biennial AMAFCA Project Schedule. AMAFCA will continue development of this program element in its MS4 Strategies and Procedures Notebook for this Program.	• AMAFCA will continue to include both structural and non-structural BMPs to control pollutants in stormwater runoff from AMAFCA owned facilities. • AMAFCA may coordinate with watershed MS4s as well as other entities within its jurisdiction during project review, complete a system review, and publish projects, including schedule and cost sharing, in the biennial AMAFCA Project Schedule. • AMAFCA will continue development of this program element in its MS4 Strategies and Procedures Notebook.	10 months from effective date of MS4 Permit Oct. 22, 2015	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, Development Review Engineer, Drainage Engineer, Field Engineer, GIS Manager
2.2	66	Development of an ordinance or other regulatory mechanism as required in <u>Part I.D.5.b.(ii).(b)</u> .	<u>Part I.D.5.b.(ii).(b)</u> - It is not within AMAFCA's jurisdiction to enact ordinances or other legal authority mechanisms. AMAFCA is unable to develop, implement, or enforce any ordinances or regulatory mechanisms required in this section.	• AMAFCA will continue to work with the cooperative MS4 TAG and other agencies to discuss and help develop regulatory mechanisms.	24 months (cooperative) from effective date of MS4 Permit Dec. 22, 2016	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, Development Review Engineer, Drainage Engineer, Field Engineer, GIS Manager

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
2.3	67	Implementation and enforcement, via the ordinance or other regulatory mechanism of site design standards as required in <u>Part I.D.5.b.(iii).(b).</u>	<u>Part I.D.5.b.(ii).(b)</u> - It is not within AMAFCA's jurisdiction to enact ordinances or other legal authority mechanisms. AMAFCA is unable to develop, implement, or enforce any ordinances or regulatory mechanisms required in this section.	<ul style="list-style-type: none"> AMAFCA will continue to work with the cooperative MS4 TAG and other agencies to discuss and help develop regulatory mechanisms. 	36 months (cooperative) from effective date of MS4 Permit Dec. 22, 2017	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, Development Review Engineer, Drainage Engineer, Field Engineer, GIS Manager
2.4	68	Ensure appropriate implementation of post-construction structural controls as required in <u>Part I.D.5.b.(ii).(c)</u> and <u>Part I.D.5.b.(ii).(d).</u>	<p><u>Part I.D.5.b.(ii).(c)</u> - AMAFCA will continue to ensure the appropriate implementation of structural BMPs on AMAFCA owned projects through pre-construction design review (see Construction Site Stormwater Runoff Control Measure). For watershed cooperative elements, AMAFCA occasionally partners with other MS4s, such as the COA, UNM, and ExpoNM, on construction of structural BMPs. AMAFCA is also a member of the MS4 TAG.</p> <p><u>Part I.D.5.b.(ii).(d)</u> - AMAFCA will conduct inspections at the beginning and end of construction, (see Construction Site Stormwater Runoff Control Measure), conduct Post-Construction inspection and maintenance (AMAFCA's routine O&M activities address post-construction stormwater management), and enforce contractual penalty provisions for noncompliance by the Operator during construction. These items will be discussed periodically with the AMAFCA Field Engineer.</p>	<ul style="list-style-type: none"> AMAFCA will ensure the appropriate implementation of structural BMPs on AMAFCA owned projects through pre-construction design review (see Construction Site Stormwater Runoff Control Measure). AMAFCA will continue to work with the watershed MS4s, TAG, and other agencies to discuss cooperative implementation of structural BMPs. AMAFCA will conduct inspections as required during construction, (see Construction Site Stormwater Runoff Control Measure). AMAFCA's Post-Construction inspections and maintenance will be through the AMAFCA O&M activities (see Pollution Prevention /Good Housekeeping Control Measure). 	10 months from effective date of MS4 Permit Oct. 22, 2015	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer and Project Managers <u>Program Implementation:</u> Engineering Intern, Development Review Engineer, Drainage Engineer, Field Engineer, GIS Manager
2.5	69	Develop procedures as required in <u>Part I.D.5.b.(ii).(e)</u> - Procedure to develop and implement an educational program for project developers regarding designs to control water quality effects from stormwater, and a training program for plan review staff regarding stormwater standards, site design techniques and controls, including training regarding GI/LID/ Sustainability practices. Training may be developed independently or obtained from outside resources; <u>Part I.D.5.b.(ii).(f)</u> - Procedures for site inspection and enforcement to ensure proper long-term operation, maintenance, and repair of storm water management practices that are put into place as part of construction projects/activities; <u>Part I.D.5.b.(ii).(g)</u> - Procedures to control the discharge of pollutants related to commercial application and distribution of pesticides, herbicides, and fertilizers; and <u>Part I.D.5.b.(ii).(h)</u> - Procedure or system to review and update, as necessary, the existing program to ensure that storm water controls or management practices for new development and redevelopment projects/ activities continue to meet the requirements and objectives of the permit.	<p><u>Part I.D.5.b.(ii).(e)</u> - As a cooperative program, AMAFCA contributes to the Mid Rio Grande Stormwater Quality Team (MRGSQT), which includes training on GI/LID and sustainability practices. This is achieved by sponsoring conferences featuring GI/LID lectures, such as the annual Land and Water Summit. Reporting on the MRGSQT activities will be part of Public Education and Outreach on Stormwater Impacts Control Measure.</p> <p><u>Part I.D.5.b.(ii).(f)</u> - AMAFCA is responsible for all long term inspection, operation, maintenance, and repair of its own facilities. AMAFCA will perform inspections, maintenance and repair in accordance with the established procedures in the "AMAFCA O&M Manual for Dams", the "AMAFCA O&M Repair Replacement and Rehabilitation Manual", and Project O&M Plan (Plan No. 7). This is covered in the Pollution Prevention/Good Housekeeping Control Measure.</p> <p><u>Part I.D.5.b.(ii).(g)</u> - AMAFCA will only allow licensed staff or professionally licensed contractors to apply herbicides and pesticides within AMAFCA rights-of-way (AMAFCA does not apply fertilizers in its operations). This is covered in the Pollution Prevention/Good Housekeeping Control Measure.</p> <p><u>Part I.D.5.b.(ii).(h)</u> - AMAFCA's routine O&M activities address post-construction stormwater management at all AMAFCA facilities.</p>	<ul style="list-style-type: none"> As a cooperative program, AMAFCA contributes to the MRGSQT. AMAFCA's educational efforts are included in the MRGSQT Outcomes Report which will summarize, if applicable, the activities where educational materials were dispersed and shared with project developers. This report is available upon request and AMAFCA plans to share this document on its website. AMAFCA will provide MS4 training for its staff and invite other agencies responsible for construction projects. AMAFCA may participate in other agencies' MS4 trainings. AMAFCA's Post-Construction inspections and maintenance are conducted following the AMAFCA O&M procedures (see Pollution Prevention /Good Housekeeping Control Measure). AMAFCA will only allow licensed staff or professionally licensed contractors to apply herbicides and pesticides within AMAFCA rights-of-way (AMAFCA does not apply fertilizers in its operations). AMAFCA will compile and document applicable program procedures in its MS4 Strategies and Procedures Notebook. 	18 months (cooperative) from effective date of MS4 Permit June 22, 2016	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
2.6	70	Coordinate internally with all departments and boards with jurisdiction over the planning, review, permitting, or approval of public and private construction projects/activities within the permit area as required in <u>Part I.D.5.b.(iii)</u> related to developed hydrology mimicking pre-development hydrology.	<u>Part I.D.5.b.(iii)</u> - AMAFCA does not have any internal departments or boards with jurisdiction. AMAFCA will coordinate with all entities as necessary. AMAFCA will coordinate internally and, to the extent possible and applicable, design AMAFCA facilities for compliance with developed hydrology mimicking pre-development hydrology. For AMAFCA led DMPs, Sediment Studies, Facility Plans, and WQ studies, AMAFCA will require, to the extent possible and applicable, that developed hydrology mimic pre-development hydrology. The NM OSE regulates the water delivery to the Rio Grande in order to meet water delivery requirements to Texas; therefore, AMAFCA's objective is to design its facilities to drain within 96 hours per the OSE requirements.	<ul style="list-style-type: none"> AMAFCA will coordinate internally on studies and projects for MS4 Permit compliance with developed hydrology mimicking pre-development hydrology. AMAFCA will abide by the NM OSE rule and plan/design its facilities to drain within 96 hours per the OSE requirements. AMAFCA will continue to follow the standard practice for Drainage Master Plans (DMPs) options development and consider two options for developed condition hydrology flowrates and volumes: 1) determine pond locations and volumes required on a sub-basin by sub-basin basis to mimic pre-development hydrology and, 2) determine pond locations and volumes required on a regional approach basis to mimic pre-development hydrology. 	10 months from effective date of MS4 Permit Oct. 22, 2015	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, AMAFCA Maintenance Crew, Development Review Engineer, Drainage Engineer, Field Engineer, Maintenance Superintendent, GIS Manager, Real Estate Manager
2.7	71	As required in <u>Part I.D.5.b.(iv)</u> , the permittee must assess all existing codes, ordinances, planning documents and other applicable regulations, for impediments to the use of GI/LID/Sustainable practices.	<p><u>Part I.D.5.b.(iv)</u> - AMAFCA does not have jurisdictional authority pertaining to codes, ordinances, planning documents and other applicable regulations, for impediments to the use of GI/LID/Sustainable practices.</p> <p>AMAFCA will provide information, as requested, and coordinate with other watershed MS4s for assessment of existing codes, ordinances, planning documents and other applicable regulations for impediments to the use of GI/LID/Sustainable practices.</p> <p>The NM OSE regulates the water delivery to the Rio Grande in order to meet water delivery requirements to Texas; therefore, AMAFCA's objective is to design its facilities to drain within 96 hours per the OSE requirements.</p>	<ul style="list-style-type: none"> AMAFCA will provide information, as requested, and coordinate and cooperate with other watershed MS4s for the assessment of existing codes, ordinances, planning documents, and other applicable regulations for impediments to the use of GI/LID/Sustainable practices. 	2 years from effective date of MS4 Permit Dec. 22, 2016	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer
2.8	72	As required in <u>Part I.D.5.b.(iv)</u> , develop and submit a report of the assessment findings on GI/LID/Sustainable practices.	<u>Part I.D.5.b.(iv)</u> - AMAFCA does not have jurisdictional authority pertaining to codes, ordinances, planning documents and other applicable regulations, for impediments to the use of GI/LID/Sustainable practices. However, to the extent permitted by law, AMAFCA will comply with the requirements of this section. AMAFCA will provide information, as requested, and coordinate with other watershed MS4s for assessment of existing codes, ordinances, planning documents and other applicable regulations for impediments to the use of GI/LID/Sustainable practices.	<p>Met Permit Requirement - Activity is Complete. No additional measurable goals.</p> <ul style="list-style-type: none"> AMAFCA provided information, as requested, and coordinated and cooperated with other watershed MS4s for the development of a report of the assessment of finding from <u>Part I.D.5.b.(iv)</u>. This was completed in March 2017 and was submitted to the EPA with the Annual Report, due Dec. 1, 2017. 	27 months (cooperative) from effective date of MS4 Permit March 22, 2017	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
Not Included in NOI	73	<p>As required in <u>Part I.D.5.b.(v)</u>, Alternative compliance for infeasibility due to Site Constraints. <u>Part I.D.5.b.(v).(a)</u> - Infeasibility to manage the design standard volume specified in Part I.D.5.b.(ii).(b), or a portion of the design standard volume, onsite may result from site constraints including:</p> <p><u>A.</u> too small a lot outside of the building footprint to create the necessary infiltrative capacity even with amended soils;</p> <p><u>B.</u> soil instability as documented by a thorough geotechnical analysis;</p> <p><u>C.</u> a site use that is inconsistent with capture and reuse of storm water;</p> <p><u>D.</u> other physical conditions; or,</p> <p><u>E.</u> to comply with applicable requirements for on-site flood control structures leaves insufficient area to meet the standard.</p> <p><u>Part I.D.5.b.(v).(b)</u> - A determination that it is infeasible to manage the design standard volume specified in Part I.D.5.b.(ii).(b), or a portion of the design standard volume, on site may not be based solely on the difficulty or cost of implementing onsite control measures, but must include multiple criteria that rule out an adequate combination of the practices set forth in Part I.D.5.b.(v).</p>	<p><u>Part I.D.5.b.(v).(a) and (b)</u> - As previously mentioned, all AMAFCA projects are regional flood control or stormwater quality projects that function as BMPs, and AMAFCA does not have jurisdictional authority pertaining to new development or redevelopment activities. Therefore, AMAFCA itself will likely not have requirements for alternative compliance regarding infeasibility to manage the post construction design standard volume. However, AMAFCA's regional facilities may offer other MS4s an option for alternative compliance to manage the post-construction stormwater quality volume. The on-site stormwater management decisions and feasibility will typically be determined during development by other agencies (COA, Bernalillo County, etc.). AMAFCA will continue coordination with and support these agency decisions, as appropriate. AMAFCA's involvement will typically occur during the development review or stake-holder review.</p>	<p>• AMAFCA will continue to coordinate with and support these agency decisions, as appropriate, related to on-site stormwater management decisions and feasibility. AMAFCA's involvement will typically occur during the development review or stake-holder review. AMAFCA's regional facilities may offer other MS4s an option for alternative compliance to manage the post-construction stormwater quality volume.</p>	No Permit required schedule.	Program Lead: AMAFCA's Stormwater Quality Engineer

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
Not Included in NOI	74	<p><u>Part I.D.5.b.(v)</u> continued -</p> <p><u>Part I.D.5.b.(v).(c)</u> - This permit does not prevent imposition of more stringent requirements related to flood control. Where both the permittee's site design standard ordinance or policy and local flood control requirements on site cannot be met due to site conditions, the standard may be met through a combination of on-site and off-site controls.</p> <p><u>Part I.D.5.b.(v).(d)</u> - Where applicable New Mexico water law limits the ability to fully manage the design standard volume on site, measures to minimize increased discharge consistent with requirements under New Mexico water law must still be implemented.</p> <p><u>Part I.D.5.b.(v).(e)</u> - In instances where an alternative to compliance with the standard on-site is chosen, technical justification as to the infeasibility of on-site management of the entire design standard volume, or a portion of the design standard volume, is required to be documented by submitting to the permittee a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect.</p>	<p><u>Part I.D.5.b.(v).(c)</u> - AMAFCA's primary function is to provide regional flood control; this includes stormwater quality projects that function as BMPs. Flood control requirements will continue to be required.</p> <p><u>Part I.D.5.b.(v).(d)</u> - The NM ISC/OSE regulates the water delivery to the Rio Grande in order to meet water delivery requirements to Texas; therefore, AMAFCA's objective is to design its facilities to drain within 96 hours per the OSE requirements. Using AMAFCA facilities for off-site mitigation would assure the community that New Mexico water law limits are being met at the AMAFCA facilities.</p> <p><u>Part I.D.5.b.(v).(e)</u> - Alternatives to compliance for on-site requirements are discussed below. AMAFCA itself will likely not have requirements for alternative compliance regarding infeasibility to manage the post construction stormwater quality volume. However, AMAFCA's regional facilities may offer other MS4s an option for alternative compliance to manage the post construction stormwater quality volume.</p>	<ul style="list-style-type: none"> • AMAFCA will continue its primary function is to provide regional flood control; this includes stormwater quality projects that function as BMPs. Flood control requirements will continue to be required. • AMAFCA will abide by the NM OSE rule and plan/design its facilities to drain within 96 hours per the ISC/OSE guidance document. Using AMAFCA facilities for off-site mitigation would assure the community that New Mexico water law limits are being met at the AMAFCA facilities. • AMAFCA's regional facilities may offer other MS4s an option for alternative compliance to manage the post construction stormwater quality volume. 	No Permit required schedule.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer
Not Included in NOI	75	<p>As required in <u>Part I.D.5.b.(v).(f)</u>, when a Permittee determines a project applicant has demonstrated infeasibility due to site constraints specified in Part I.D.5.b.(v) to manage the design standard volume specified in Part I.D.5.b.(ii).(b) or a portion of the design standard volume on-site, the Permittee shall require one of the following mitigation options:</p> <p><u>A.</u> The off-site mitigation option only applies to redevelopment sites and cannot be applied to new development. Management of the standard volume, or a portion of the volume, may be implemented at another location within the MS4 area, approved by the permittee. The permittee shall identify priority areas within the MS4 in which mitigation projects can be completed and shall determine who will be responsible for long-term maintenance on off-site mitigation projects.</p> <p><u>B.</u> Implementation of a project that has been determined to provide an opportunity to replenish regional ground water supplies at an offsite location.</p> <p><u>C.</u> Payment in lieu may be made to the permittee, who will apply the funds to a public storm water project. MS4s shall maintain a publicly accessible database of approved projects for which these payments may be used.</p>	<p><u>Part I.D.5.b.(v).(f)</u> - AMAFCA may continue to coordinate with watershed MS4s and other entities within its jurisdiction to discuss areas requiring drainage and water quality improvements, project priorities, and multi-agency funding opportunities. Off-site stormwater quality mitigation projects will be included in these discussions. As part of the development of the AMAFCA Project Schedule, a system review will be completed. AMAFCA will publish projects, including schedule and cost sharing, in the biennial AMAFCA Project Schedule.</p> <p>AMAFCA, as part of the MS4 TAG, has discussed with EPA Region 6 (verbally and in writing) the MS4 Permit language for this section. The MS4 TAG members and EPA discussed how some of the terms/language of the Permit may limit the flexibility of the MS4s to allow off-site stormwater mitigation. The MS4s identified terms in the Permit which restrict the flexibility to achieve stormwater quality objectives by using alternate methods of compliance with post-construction permit requirements. The MS4 TAG provided this in writing to EPA on August 19, 2017 (letter from Dave Gatterman, SSCAFCA, "August 8, 2016 Meeting Follow-up"). This letter included scanned page 30 of Permit No. NMR04A000 to illustrate language changes the MS4 TAG think would allow the permittees to move forward and comply with both the Permit and state statute. Removing these limitations relative to post construction runoff will better allow the permittees flexibility to comply with New Mexico water law, protect the quality of the river, and not overly constrict development of our arid watershed. AMAFCA will continue discussions with EPA Region 6 regarding Permit language related to off-site stormwater mitigation.</p>	<ul style="list-style-type: none"> • AMAFCA may coordinate with watershed MS4s as well as other entities during project review, complete a system review, and publish projects, including schedule and cost sharing, in the biennial AMAFCA Project Schedule. Off-site stormwater quality mitigation projects may be included in these discussions. • AMAFCA will continue discussions with EPA Region 6 regarding Permit language related to off-site stormwater mitigation. Removing these Permit limitations relative to post construction runoff will better allow the permittees flexibility to comply with New Mexico water law, protect the quality of the river, and not overly constrict development of our arid watershed. 	No Permit required schedule.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
2.9	76	Estimation of the number of acres of IA and DCIA as required in Part I.D.5.b.(vi) .	Part I.D.5.b.(vi) - AMAFCA will estimate the Impervious Area (IA) and Directly Connected Impervious Area (DCIA) within AMAFCA's jurisdiction and/or rights of way.	<ul style="list-style-type: none"> AMAFCA will estimate the IA and DCIA within AMAFCA's jurisdiction and/or rights of way. AMAFCA will update this estimate, as appropriate, given development in the watersheds. This will be a cooperative effort with other watershed MS4s. 	30 months (cooperative) from effective date of MS4 Permit June 22, 2017	Program Lead: AMAFCA's Stormwater Quality Engineer Program Implementation: Engineering Intern, GIS Manager
2.10	77	<p>Inventory and priority ranking as required in Part I.D.5.b.(vii) for MS4-owned property and infrastructure (including public right-of-way) that may have the potential to be retrofitted with control measures designed to control the frequency, volume, and peak intensity of stormwater discharges to and from its MS4.</p> <p>The NM Office of the State Engineer (OSE) regulates the water delivery to the Rio Grande in order to meet water delivery requirements to Texas; therefore, AMAFCA's objective is to design its facilities to drain within 96 hours per the OSE requirements.</p>	<p>Part I.D.5.b.(vii) - AMAFCA will continue to keep an inventory and develop a priority ranking of AMAFCA owned properties and facilities that may have the potential for retrofitted control measures and stormwater quality facilities and BMPs. AMAFCA may continue to coordinate with watershed MS4s and other entities within its jurisdiction to discuss areas requiring drainage and water quality retrofits, project priorities, and multi-agency funding. AMAFCA will publish projects, including schedule and cost sharing, in the biennial AMAFCA Project Schedule. As part of the development of the AMAFCA Project Schedule, a system review will be completed. Internally, using the Project Schedule, water quality projects and water quality retrofit projects may be ranked and tabulated. AMAFCA may evaluate the existing BMPs based on their effectiveness and capacity in order to identify where additional BMPs are needed.</p> <p>AMAFCA is also a member of the cooperative MS4 TAG, facilitating cooperation and coordination with other watershed MS4s.</p> <p>AMAFCA will operate and maintain Levelloggers in major inlets into the NDC on AMAFCA ROW and analyze the data to assist in the priority ranking.</p> <p>AMAFCA will complete, as allowed, updated hydrologic analyses for the Rio Grande watersheds to assist with determining priority ranking.</p>	<ul style="list-style-type: none"> AMAFCA may continue to coordinate with watershed MS4s and other entities within its jurisdiction to discuss the areas requiring drainage and water quality retrofitting within the Middle Rio Grande Watershed, project priorities, and multi-agency funding contributions. AMAFCA will publish the AMAFCA-funded projects, including the schedule and proposed cost-sharing, in the biennial AMAFCA Project Schedule. As part of the development of the AMAFCA Project Schedule, a system review will be completed. AMAFCA may utilize the Project Schedule, in part, to rank and tabulate water quality projects and water quality retrofit projects. AMAFCA will continue membership and involvement in the cooperative MS4 TAG which will facilitate cooperation and coordination with other MS4s in the Middle Rio Grande. AMAFCA will operate and maintain Levelloggers in major channel inlets into the NDC on AMAFCA ROW and analyze the data to assist with priority ranking. AMAFCA will complete updated hydrologic analyses, utilizing the AMAFCA White Paper Methodology, for the NDC watersheds, to assist with determining priority ranking. 	42 months (cooperative) from effective date of MS4 Permit June 22, 2018	Program Lead: AMAFCA's Stormwater Quality Engineer Program Implementation: Engineering Intern, Drainage Engineer, GIS Manager

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
2.11	78	<p>Incorporate watershed protection elements into regular planning or policy documents as required in Part I.D.5.b.(viii). As applicable to each permittee's MS4 jurisdiction, policy and/or planning documents must include the following:</p> <p><u>Part I.D.5.b.(viii).(a)</u> - A description of master planning and project planning procedures to control the discharge of pollutants to and from the MS4.</p> <p><u>Part I.D.5.b.(viii).(b)</u> - Minimize the amount of impervious surfaces (roads, parking lots, roofs, etc.) within each watershed, by controlling the unnecessary creation, extension and widening of impervious parking lots, roads and associated development.</p> <p><u>Part I.D.5.b.(viii).(c)</u> - Identify environmentally and ecologically sensitive areas that provide water quality benefits and serve critical watershed functions within the MS4 and ensure requirements to preserve, protect, create and/or restore these areas are developed and implemented during the plan and design phases of projects in these identified areas.</p>	<p><u>Part I.D.5.b.(viii).(a)</u> - AMAFCA will continue to produce and publish the biennial AMAFCA Project Schedule for all regional drainage and water quality projects within AMAFCA's jurisdiction that will either be led or partly funded by AMAFCA. For the projects led by AMAFCA, watershed protection elements may be incorporated, when feasible, into drainage management plans, as appropriate, in order to identify watersheds which can be retrofitted with regional water quality facilities.</p> <p><u>Part I.D.5.b.(viii).(b)</u> - This section is not applicable to AMAFCA's projects, which are regional flood control or water quality projects.</p> <p><u>Part I.D.5.b.(viii).(c)</u> - During planning of AMAFCA projects, environmentally and ecologically sensitive areas that provide water quality benefits are considered.</p>	<ul style="list-style-type: none"> • Produce and publish the AMAFCA Project Schedule for CY 2016 and every other year thereafter. • AMAFCA may coordinate with MS4s to provide input for project planning of infrastructure retrofitting. • For projects led by AMAFCA, watershed protection elements may be incorporated into Drainage Management Plans, as appropriate, in order to identify watersheds which potentially can be retrofitted with regional water quality facilities. • All AMAFCA projects will obtain USFWS, USACE, and/or pueblo consultation, if required. 	<p>10 months from effective date of MS4 Permit</p> <p>Oct. 22, 2015</p>	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation:</u> Engineering Intern, Drainage Engineer, GIS Manager</p>
2.11	79	<p>Continuation of incorporate watershed protection elements into regular planning or policy documents as required in Part I.D.5.b.(viii).</p> <p><u>Part I.D.5.b.(viii).(d)</u> - Implement stormwater management practices that minimize water quality impacts to streams, including disconnecting direct discharges to surface waters from impervious surfaces such as parking lots.</p> <p><u>Part I.D.5.b.(viii).(e)</u> - Implement stormwater management practices that protect and enhance groundwater recharge as allowed under the applicable water rights laws.</p> <p><u>Part I.D.5.b.(viii).(f)</u> - Seek to avoid or prevent hydromodification of streams and other water bodies caused by development, including roads, highways, and bridges.</p> <p><u>Part I.D.5.b.(viii).(g)</u> - Develop and implement policies to protect native soils, prevent topsoil stripping, and prevent compaction of soils.</p> <p><u>Part I.D.5.b.(viii).(h)</u> - The program must be specifically tailored to address local community needs (e.g. protection to drinking water sources, reduction of water quality impacts) and must be designed to attempt to maintain pre-development runoff conditions.</p>	<p><u>Part I.D.5.b.(viii).(d)</u> - This section is rarely applicable to AMAFCA's projects. In the arid southwest, direct discharges to surface waters are rare.</p> <p><u>Part I.D.5.b.(viii).(e)</u> - The NM OSE regulates the water delivery to the Rio Grande in order to meet water delivery requirements to Texas; therefore, AMAFCA's objective is to design its facilities to drain within 96 hours per the OSE requirements.</p> <p><u>Part I.D.5.b.(viii).(f)</u> - AMAFCA projects, to the extent feasible and as consistent with O&M of sediment removal, will continue to seek to avoid or prevent hydromodification of streams and other water bodies.</p> <p><u>Part I.D.5.b.(viii).(g)</u> - AMAFCA projects and those in coordination with other MS4s, will, to the extent possible, protect native soils, prevent topsoil stripping, and prevent compaction of soils.</p> <p><u>Part I.D.5.b.(viii).(h)</u> - AMAFCA does not have jurisdictional authority pertaining to development or redevelopment activities. However, through AMAFCA's involvement with the MRGSQT and TAG, AMAFCA will support programs tailored to address local community needs and that are designed to attempt to maintain pre-development runoff conditions.</p>	<ul style="list-style-type: none"> • AMAFCA will develop written procedures that include applicable watershed protection elements in Part I.D.5.b.(viii).(f), (g) and (h) as required in the MS4 Permit and as applicable to AMAFCA. • AMAFCA will continue to contribute and participate in the MRGSQT, which supports programs tailored to address local community needs and are designed to attempt to maintain pre-development runoff conditions. • AMAFCA will complete updated hydrologic analyses, utilizing the AMAFCA White Paper Methodology, for the NDC watersheds, to assist with understanding options for maintaining pre-development runoff conditions. 	<p>10 months from effective date of MS4 Permit</p> <p>Oct. 22, 2015</p>	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation:</u> Engineering Intern</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
Not Included in NOI	80	<p>Update the SWMP document and annual report as required in Part I.D.5.b.(ix) and Part I.D.5.b.(x). The permittee must update the SWMP as necessary to include a description of the mechanism(s) utilized to comply with the permit elements listed above as well as the citations/descriptions of design standards for structural and non-structural controls to control pollutants in runoff. The following information must be included in each Annual Report:</p> <p>Part I.D.5.b.(x)(a) - Include a summary and analysis of all maintenance, inspections and enforcement, and the number and frequency of inspections performed annually.</p> <p>Part I.D.5.b.(x)(b) - A cumulative listing of the annual modifications made to the Post-Construction Stormwater Management Program, and</p> <p>Part I.D.5.b.(x)(c) - According to the schedule presented in Table 3, the permittee must:</p> <p>A. Report the no. of MS4-owned properties and infrastructure that have been retrofitted with control measures designed to control the frequency, volume, and peak intensity of stormwater discharges.</p> <p>B. As required in Part I.D.5.b.(vi), report the tabulated results for IA & DCIA and its estimation methodology.</p>	<p>Part I.D.5.b.(ix) - AMAFCA will update the SWMP as necessary to comply with the permit elements listed above as well as the citations and descriptions of design standards for structural and non-structural controls to control pollutants in stormwater runoff, including discussion of the methodology used during design for estimating impacts to water quality and selecting structural and non-structural controls.</p> <p>Part I.D.5.b.(x)(a) - AMAFCA tracks all crew activity related to maintenance of all water quality structures.</p> <p>Part I.D.5.b.(x)(b) - AMAFCA does not have any development or redevelopment projects - all AMAFCA projects are regional flood control or water quality projects. AMAFCA will continue to maintain a cumulative listing of the annual modifications made to the Post-Construction Stormwater Management Program.</p> <p>Part I.D.5.b.(x)(c)(A) - AMAFCA will continue to maintain a list of properties and infrastructure within AMAFCA rights-of-way that have been retrofitted with control measures designed to control frequency, volume and peak intensity of stormwater discharges.</p> <p>Part I.D.5.b.(x)(c)(B) - AMAFCA will estimate the Impervious Area (IA) and Directly Connected Impervious Area (DCIA) within AMAFCA's jurisdiction and/or rights of way (refer to ID 76).</p>	<ul style="list-style-type: none"> • AMAFCA will update the SWMP as necessary to comply with the permit elements listed above. • AMAFCA will continue to annually inspect and track all crew activity related to maintenance of all AMAFCA owned water quality structures. • AMAFCA will continue to maintain a cumulative listing of the annual modifications made to the Post-Construction Stormwater Management Program. • AMAFCA will continue to provide a cumulative list of AMAFCA's retrofit BMPs. AMAFCA will incorporate documentation by reference into the Annual Report and plans to document progress on the AMAFCA website. • AMAFCA will estimate the IA and DCIA within AMAFCA's jurisdiction and/or rights of way. AMAFCA will update this estimate, as appropriate, given development in the watersheds. This will be a cooperative effort with other watershed MS4s (refer to ID 76). 	Update as necessary for SWMP.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, Development Review Engineer, Drainage Engineer, Field Engineer

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
2.12	81	Enhance the program to include the elements in <u>Part I.D.5.b.(xi)</u> and <u>Part I.D.5.a.(xii)</u> . These include: <u>Part I.D.5.b.(xi)</u> - Use of stormwater educational materials; and <u>Part I.D.5.b.(xii)</u> - When choosing appropriate BMPs, the permittee may participate in locally-based watershed planning efforts, which attempt to involve a diverse group of stakeholders including interested citizens. and <u>Part I.D.5.b.(xiii)</u> - The permittee may incorporate the following elements in the Post-Construction Stormwater Management in New Development and Redevelopment program required in Part I.D.5.b.(ii)(b): (a) Provide requirements and standards to direct growth to identified areas to protect environmentally and ecologically sensitive areas such as floodplains and/or other areas with endangered species and historic properties concerns; (b) Include requirements to maintain and/or increase open space/buffers along sensitive water bodies, minimize impervious surfaces, and minimize disturbance of soils and vegetation; and (c) Encourage in fill development in higher density urban areas, and areas with existing storm sewer infrastructure.	<u>Part I.D.5.b.(xi)</u> - As part of the MRGSQT, AMAFCA will continue to use stormwater educational materials, either developed locally or provided by EPA, NMED environmental groups, public interest groups, trade organizations, and/or other MS4 as well as utilizing the MRGSQT. <u>Part I.D.5.b.(xii)</u> - AMAFCA may continue to participate in the watershed-planning efforts with other MS4s in order to publish the AMAFCA Project Schedule biennially. AMAFCA will continue membership and involvement in the cooperative MS4 TAG, which will facilitate cooperation and coordination with other MS4s in the Middle Rio Grande watershed. <u>Part I.D.5.b.(xiii)</u> - These program enhancements are outside the AMAFCA's authority and mission. However, AMAFCA will cooperate with other watershed MS4s, as applicable, to support this program enhancement.	<ul style="list-style-type: none"> • AMAFCA will continue to contribute and participate in the MRGSQT. The MRGSQT Outcomes Report will summarize the activities where educational materials were dispersed and shared with the public. This report is available upon request and AMAFCA plans to share this document on its website. • AMAFCA may coordinate with MS4s for project planning of infrastructure retrofitting. AMAFCA will continue to produce and publish the AMAFCA Project Schedule for CY 2016 and every other year thereafter. • AMAFCA will continue membership and involvement in the cooperative MS4 Technical Advisory Group (MS4 TAG) which will facilitate cooperation and coordination with other MS4s in the Middle Rio Grande. 	No Permit required schedule.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, GIS Manager
2.13	82	Item from MS4 Permit NOI. Describe other proposed activities to address the Post-Construction Stormwater Management in New Development and Redevelopment Measure.	Because AMAFCA is a flood control authority, the legal authority and jurisdiction granted to it by the State of New Mexico is limited. AMAFCA has begun requiring, and will continue to require, MS4 permit elements into construction contracts.	<ul style="list-style-type: none"> • AMAFCA will continue, as appropriate, to insert MS4 Permit elements into construction contracts to provide AMAFCA with a contractual mechanism for MS4 elements. 	No Permit required schedule.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
	83	TABLE 4: Pollution Prevention/Good Housekeeping for Municipal/Co-permittee Operations - Part I.D.5.c				
3.1	84	Develop or update the Pollution Prevention/Good Housekeeping program to include the elements in Part I.D.5.c.(i). Elements include: <u>Part I.D.5.c.(i).(a)</u> - Employee training program to incorporate pollution prevention and good housekeeping, including a tracking procedure; <u>Part I.D.5.c.(i).(b)</u> - O&M activities, schedules, and long term inspections procedures for structural and non-structural stormwater controls; <u>Part I.D.5.c.(i).(c)</u> - Controls for reducing or eliminating the discharge of pollutants from AMAFCA maintenance and storage yards and shop; <u>Part I.D.5.c.(i).(d)</u> - Procedures for properly disposing of waste removed from separate storm sewers and facilities listed in Part I.D.5.c.(i).(c) (such as dredged spoil, accumulated sediments, floatables, and other debris); <u>Part I.D.5.c.(i).(e)</u> - Procedures to ensure that new flood management projects assess the impacts on water quality and examine existing projects for incorporating additional water quality protection devices or practices.	<u>Part I.D.5.c.(i)</u> - AMAFCA will continue its Pollution Prevention/Good Housekeeping Program. <u>Part I.D.5.c.(i).(a)</u> - AMAFCA will continue employee training to incorporate pollution prevention and good housekeeping; <u>Part I.D.5.c.(i).(b)</u> - AMAFCA will adhere to its current O&M and Safety procedures, which include employee training for maintenance of AMAFCA flood control and water quality facilities and BMPs. <u>Part I.D.5.c.(i).(c)</u> - AMAFCA will implement and maintain controls for reducing the discharge of pollutants from AMAFCA maintenance and storage yards and shop; <u>Part I.D.5.c.(i).(d)</u> - AMAFCA will develop procedures, where appropriate, for properly disposing of waste removed from AMAFCA facilities (sediment, floatables, and other debris); <u>Part I.D.5.c.(i).(e)</u> - AMAFCA ensures that new projects will assess the impacts on water quality and existing projects will be examined for retrofit opportunities as part of AMAFCA's Post Construction Control Measures.	<ul style="list-style-type: none"> AMAFCA will document training provided to its employees & include pollution prevention and good housekeeping into training, as needed. AMAFCA encourages that crew members are trained in spill prevention & control, as well as truck fueling activities during the Permit term. AMAFCA will adhere to its current O&M and Safety Procedures. In the Annual Report, AMAFCA will consider projected costs for the operation and maintenance of its stormwater quality facilities. AMAFCA will continue development of this program element in its MS4 Strategies and Procedures Notebook. This will address stormwater controls for AMAFCA's yard and standard operating procedures, as applicable, for disposal activities. AMAFCA will review new projects to assess the impacts on water quality and will examine existing projects for retrofit opportunities as part of AMAFCA's Post Construction Control Measure. 	10 months from effective date of MS4 Permit Oct. 22, 2015	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, AMAFCA Maintenance Crew, Field Engineer, Maintenance Superintendent
3.2	85	The program will include the elements in Part I.D.5.c.(ii). These include: <u>Part I.D.5.c.(ii).(a)</u> - Develop or update the existing list of all stormwater quality facilities by drainage basin, including location and description;	<u>Part I.D.5.c.(ii).(a)</u> - As part of the Program, AMAFCA will continue to up-date a map of all stormwater quality facilities by drainage basin, including location and description.	<ul style="list-style-type: none"> AMAFCA will continue to up-date a map of all AMAFCA stormwater quality facilities by drainage basin, including location and description. 	30 months (cooperative) from effective date of MS4 Permit June 22, 2017	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, AMAFCA Maintenance Crew, Field Engineer, Maintenance Superintendent, GIS Manager
3.2	86	<u>Part I.D.5.c.(ii).(b)</u> - Develop or modify existing operational manual for de-icing activities addressing alternate materials and methods to control impacts to stormwater quality;	<u>Part I.D.5.c.(ii).(b)</u> - N/A - AMAFCA only has jurisdiction to maintain its facilities; AMAFCA does not engage in the following: de-icing, roadway debris control, street sweeping, or roadway pollutant removal.	N/A	N/A	N/A

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
3.2 & 3.4	87	<u>Part I.D.5.c.(ii).(c)</u> - Develop or modify existing program to control pollution in stormwater runoff from equipment and vehicle maintenance yards and maintenance center operations located within the MS4;	<u>Part I.D.5.c.(ii).(c)</u> - For compliance with this section of the MS4 Permit, AMAFCA's focus is to evaluate and modify, where necessary, the existing program to control pollution in stormwater runoff from AMAFCA's equipment and vehicle maintenance yard and satellite facilities.	<ul style="list-style-type: none"> AMAFCA will continue to implement and maintain the recommended administrative and structural BMPs, as appropriate, from the Good Housekeeping Inspection Reports for AMAFCA facilities. AMAFCA will continue development of this program element in its MS4 Strategies and Procedures Notebook. 	10 months from effective date of MS4 Permit Oct. 22, 2015	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, AMAFCA Maintenance Crew, Field Engineer, Maintenance Superintendent
3.2	88	<u>Part I.D.5.c.(ii).(d)</u> - Develop or modify existing street sweeping program. Assess possible benefits from changing frequency or timing of sweeping activities or utilizing different equipment for sweeping activities;	<u>Part I.D.5.c.(ii).(d)</u> - N/A - AMAFCA only has jurisdiction to maintain its facilities; AMAFCA does not engage in the following: de-icing, roadway debris control, street sweeping, or roadway pollutant removal.	N/A	N/A	N/A
3.2	89	<u>Part I.D.5.c.(ii).(e)</u> - A description of procedures used by permittees to target roadway areas most likely to contribute pollutants to and from the MS4 (i.e., runoff discharges directly to sensitive receiving water, roadway receives majority of de-icing material, roadway receives excess litter, roadway receives greater loads of oil and grease);	<u>Part I.D.5.c.(ii).(e)</u> - AMAFCA only has jurisdiction to maintain its facilities; AMAFCA does not engage in the following: de-icing, roadway debris control, street sweeping, or roadway pollutant removal. AMAFCA will continue coordination, as applicable, with other MS4s in the watershed related to illicit discharge detection and elimination from roadways - refer to the Illicit Discharges and Improper Disposal Control Measure.	N/A	N/A	N/A
3.2	90	<u>Part I.D.5.c.(ii).(f)</u> - Develop or revise existing standard operating procedures for collection of used motor vehicle fluids (at a minimum oil and antifreeze) and toxics (including paint, solvents, fertilizers, pesticides, herbicides, and other hazardous materials) used in permittee operations or discarded in the MS4, for recycle, reuse, or proper disposal.	<u>Part I.D.5.c.(ii).(f)</u> - For compliance with this section of the MS4 Permit, AMAFCA's focus is to evaluate and modify, where necessary, the existing program to control pollution in stormwater runoff from the equipment and vehicle maintenance yard.	<ul style="list-style-type: none"> AMAFCA will maintain the existing program to control polluted stormwater runoff from its equipment and maintenance yard. AMAFCA will continue to implement and maintain the recommended BMPs, as appropriate, from the Good Housekeeping Inspection Report for AMAFCA facilities. AMAFCA will continue development of this program element in its MS4 Strategies and Procedures Notebook. 	10 months from effective date of MS4 Permit Oct. 22, 2015	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, AMAFCA Maintenance Crew, Field Engineer, Maintenance Superintendent

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
3.2	91	<u>Part I.D.5.c.(ii).(g)</u> - Standard operating procedure for disposal of accumulated sediments, floatables, and debris;	<u>Part I.D.5.c.(ii).(g)</u> - AMAFCA performs waste disposal for sediment, floatables, and other debris in accordance with the "AMAFCA Operations and Maintenance Manual for Dams" and "AMAFCA Operation and Maintenance Repair Replacement and Rehabilitation Manual" (OMRRR). As a cooperative program, AMAFCA is a participant in an OMRRR with Bernalillo County, the MRGCD, and the Bureau of Reclamation related to facilities that are connected to MRGCD ditches (primarily in the SW Valley of Albuquerque).	<ul style="list-style-type: none"> Continue to perform all waste disposal for sediment, floatables, and other debris in accordance with the operation and maintenance manuals and direct vendor contractors to collect and dispose of trash, floatables, and debris. AMAFCA will develop standard operating procedures, as applicable, for these disposal activities and include them in the program's MS4 Strategies and Procedures Notebook section. AMAFCA will continue to participate, as appropriate, in the Operation Maintenance Repair, Replacement, and Rehabilitation (OMRRR) - Southwest Valley Flood Reduction Project cooperative program with MRGCD, Bernalillo County, and Bureau of Reclamation. 	30 months (cooperative) from effective date of MS4 Permit June 22, 2017	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, AMAFCA Maintenance Crew, Field Engineer, Maintenance Superintendent
3.2	92	<u>Part I.D.5.c.(ii).(h)</u> - litter source control program, include targeted public awareness campaign;	<u>Part I.D.5.c.(ii).(h)</u> - Through involvement in the MRGSQT, AMAFCA will continue to collaborate with the MS4 permittees to improve upon the existing litter source control program, including a targeted public awareness campaign.	<ul style="list-style-type: none"> AMAFCA will continue its involvement with and financial support of the MRGSQT. AMAFCA will continue to collaborate with the MS4 permittees to improve upon the existing litter source control program. The MRGSQT Outcomes Report is available upon request and AMAFCA plans to share this document on its website. 	30 months (cooperative) from effective date of MS4 Permit June 22, 2017	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern
3.2	93	<u>Part I.D.5.c.(ii).(i)</u> - Develop or review and revise, as necessary, the criteria, procedures and schedule to evaluate existing flood control devices, structures and drainage ways to assess the potential of retrofitting to provide additional pollutant removal from stormwater. Implement routine review to ensure new and/or innovative practices are implemented where applicable.	<u>Part I.D.5.c.(ii).(i)</u> - AMAFCA may continue to coordinate with watershed MS4s and other entities within its jurisdiction to discuss areas requiring drainage and water quality retrofits, project priorities, and multi-agency funding. AMAFCA will publish projects, including schedule and cost sharing, in the biennial AMAFCA Project Schedule. Operation and Maintenance procedures, inspections, repairs, and retrofits are evaluated through the annual cooperative Agency and Area Wide and Miscellaneous contracts.	<ul style="list-style-type: none"> AMAFCA may continue to coordinate with watershed MS4s and other entities within its jurisdiction to discuss the areas requiring drainage and water quality retrofitting within the Middle Rio Grande Watershed, project priorities, and multi-agency funding contributions. AMAFCA will continue to produce and publish the biennial AMAFCA Project Schedule, which includes projects for retrofitting existing flood control devices, structures and drainage ways to provide additional pollutant removal from stormwater. AMAFCA will continue to participate in the cooperative Agency and Area Wide contract and utilize the Miscellaneous contract to address rehabilitation, repair, and retrofit activities for AMAFCA structures. 	30 months (cooperative) from effective date of MS4 Permit June 22, 2017	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, AMAFCA Maintenance Crew, Field Engineer, Maintenance Superintendent, GIS Manager

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
3.2	94	<u>Part I.D.5.c.(ii).(i)</u> - Enhance inspection and maintenance programs by coordinating with maintenance personnel to ensure that a target number of structures per basin are inspected and maintained per quarter;	<u>Part I.D.5.c.(ii).(i)</u> - AMAFCA has in place a well-defined and implemented routine inspection and O&M program that includes both formal and informal inspections and maintenance schedules. This program will be enhanced to ensure a target number of structures per basin are inspected and maintained per quarter, as required by the MS4 Permit, for annual compliance with the MS4 Permit. AMAFCA will enhance its inspection and maintenance programs, as required by the MS4 Permit, through improved coordination with the Stormwater Quality Engineer, Field Engineer, Maintenance Superintendent, and AMAFCA Maintenance Crew. AMAFCA will, depending on funding available, utilize the Agency and Area Wide and Miscellaneous contracts to address portions of the required inspection and maintenance.	<ul style="list-style-type: none"> AMAFCA will continue coordination between maintenance personnel and staff to ensure that, on average, two (2) structures per basin are inspected and maintained per quarter. AMAFCA will, depending on funding available, utilize the Agency and Area Wide and Miscellaneous contracts to address portions of the required inspection and maintenance. 	30 months (cooperative) from effective date of MS4 Permit June 22, 2017	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, AMAFCA Maintenance Crew, Field Engineer, Maintenance Superintendent
3.2	95	<u>Part I.D.5.c.(ii).(k)</u> - Enhance the existing program to control the discharge of floatables and trash from the MS4 by implementing source control of floatables in industrial and commercial areas;	<u>Part I.D.5.c.(ii).(k)</u> - AMAFCA does not have jurisdiction over industrial and commercial areas in the MS4. AMAFCA will continue coordination with the MRG MS4s, as well as involvement with the MRGSQT and the MS4 TAG, to enhance the program to control the discharge of floatables and trash from the MS4 by implementing source control of floatables in industrial and commercial areas.	<ul style="list-style-type: none"> AMAFCA will continue its involvement with and financial support of the MRGSQT. AMAFCA will continue to collaborate with the MS4 permittees to improve upon the source control of floatables in industrial and commercial areas. AMAFCA will continue membership and involvement in the cooperative MS4 TAG. 	30 months (cooperative) from effective date of MS4 Permit June 22, 2017	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer
3.2	96	<u>Part I.D.5.c.(ii).(l)</u> - Include in each Annual Report, a cumulative summary of retrofit evaluations conducted during the permit term on existing flood control devices, structures and drainage ways to benefit water quality. Update the SWMP to include a schedule (with priorities) for identified retrofit projects;	<u>Part I.D.5.c.(ii).(l)</u> - AMAFCA may continue to coordinate with watershed MS4s and other entities within its jurisdiction to discuss areas requiring drainage and water quality retrofits, project priorities, and multi-agency funding. As part of the development of the AMAFCA Project Schedule, a system review will be completed. AMAFCA will publish projects, including schedule and cost sharing, in the biennial AMAFCA Project Schedule. Using the Project Schedule process, water quality projects and water quality retrofit projects may be ranked and prioritized.	<ul style="list-style-type: none"> AMAFCA will continue to provide a cumulative list of AMAFCA's retrofit BMPs. AMAFCA will incorporate documentation by reference into the Annual Report and plans to document progress on the AMAFCA website - refer to the Post-Construction Control Measure. AMAFCA will continue including facility evaluations as part of AMAFCA studies, including drainage management plans, facility plans, and other analysis projects, as appropriate. AMAFCA will continue to include BMP/water quality facility retrofit projects in the biennial Project Schedule. 	30 months (cooperative) from effective date of MS4 Permit Oct. 22, 2015 or June 22, 2017	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, Development Review Engineer, Field Engineer, GIS Manager

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
3.2	97	<p><u>Part I.D.5.c.(ii).(m)</u> - Flood management projects: review and revise, as necessary, technical criteria guidance documents and program for the assessment of water quality impacts and incorporation of water quality controls into future flood control projects. The criteria guidance document must include the following elements:</p> <p><u>Part I.D.5.c.(ii).(m).A.</u> - Describe how new flood control projects are assessed for water quality impacts.</p> <p><u>Part I.D.5.c.(ii).(m).B.</u> - Provide citations and descriptions of design standards that ensure water quality controls are incorporated in future flood control projects.</p> <p><u>Part I.D.5.c.(ii).(m).C.</u> - Include method for permittees to update standards with new and/or innovative practices.</p> <p><u>Part I.D.5.c.(ii).(m).D.</u> - Describe master planning and project planning procedures and design review procedures.</p>	<p><u>Part I.D.5.c.(ii).(m).A.</u> - AMAFCA, through its processes, will assess new flood control projects for water quality impacts. As new flood control projects are constructed, AMAFCA will consider the appropriate time and location for the collection of water quality data to assess project water quality impacts. During facility planning, AMAFCA will adhere to current and future drainage and water quality management plans passed by the AMAFCA Board of Directors, Bernalillo County Commission, or Albuquerque City Council. AMAFCA will continue its proactive policy of incorporating stormwater quality BMPs into new flood control projects when feasible. AMAFCA will publish projects, including schedule and cost sharing, in the biennial AMAFCA Project Schedule. Using the Project Schedule process, water quality projects and water quality retrofit projects may be ranked and prioritized.</p> <p><u>Part I.D.5.c.(ii).(m).B.</u> - AMAFCA is assessing the use of National design standards related to water quality controls.</p> <p><u>Part I.D.5.c.(ii).(m).C.</u> - AMAFCA will continually assess design standards and practices, technical specifications, and BMPs and implement them, as applicable.</p> <p><u>Part I.D.5.c.(ii).(m).D.</u> - AMAFCA has established procedures for master planning through its Drainage Master Plan development, project planning procedures using its Project Schedule, and design review procedures used by its Development Review Engineer.</p>	<ul style="list-style-type: none"> • AMAFCA has all of the elements of the Technical Criteria Guidance Document as part of their various programs but not as part of one document. Many of these elements are done in cooperation with watershed MS4s. • AMAFCA's Project Schedule process includes, in part, coordination with watershed MS4s, TAG members, and other entities within its jurisdiction and may include the ranking of flood control and stormwater quality projects. • AMAFCA is assessing the use of National design standards related to water quality controls. • AMAFCA will continually assess design standards and practices and implementing them, as applicable. • AMAFCA will continue to follow its established procedures for Drainage Master Plan development, project planning procedures using its Project Schedule, and design review procedures used by its Development Review Engineer. 	30 months (cooperative) from effective date of MS4 Permit June 22, 2017	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation:</u> Engineering Intern, Development Review Engineer, GIS Manager</p>
3.2	98	<p><u>Part I.D.5.c.(ii).(n)</u> -Develop procedures to control the discharge of pollutants related to the storage and application of pesticides, herbicides, and fertilizers applied, by the permittee's employees or contractors, to public right-of-ways, parks, and other municipal property. The permittee must provide an updated description of the data monitoring system for all permittee departments utilizing pesticides, herbicides and fertilizers.</p>	<p><u>Part I.D.5.c.(ii).(n)</u> - AMAFCA will only allow licensed staff or professionally licensed contractors to apply herbicides and pesticides within AMAFCA rights-of-way (AMAFCA does not apply fertilizers in its operations). In addition, AMAFCA will review, as necessary, leases and licenses, to ensure wording is included addressing the control of discharge of pollutants related to the storage and application of pesticides, herbicides, and fertilizers applied by entities leasing or licensed to use AMAFCA lands. AMAFCA will develop a tracking system to monitor herbicides and pesticides within AMAFCA rights-of-way (AMAFCA does not apply fertilizers in its operations). AMAFCA will store all herbicides and pesticides according to direction by product vendors.</p>	<ul style="list-style-type: none"> • AMAFCA personnel will typically not apply fertilizers in its operations. • AMAFCA will only allow professional licensed contractors or licensed crew members to apply herbicides and pesticides within AMAFCA rights-of-way. • AMAFCA will be reviewing, as necessary, leases and licenses, to ensure wording is included addressing the control of discharge of pollutants related to the storage and application of herbicides, pesticides, and fertilizers applied by entities leasing or licensed to use AMAFCA lands. • AMAFCA will continue developing a tracking system to monitor herbicide and pesticide applications within AMAFCA ROW. • AMAFCA will store all herbicides and pesticides according to direction by product vendors. 	10 months from effective date of MS4 Permit Oct. 22, 2015	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation:</u> AMAFCA Maintenance Crew, Field Engineer, Maintenance Superintendent</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
3.3	99	Develop or update a list and a map of industrial facilities owned or operated by the permittee as required in <u>Part I.D.5.c.(iii)</u> .	<u>Part I.D.5.c.(iii)</u> - N/A - No EPA Multi Sector General Permit (MSGP) facilities within AMAFCA rights-of-way. This has been discussed and confirmed with NMED. This was submitted to EPA in AMAFCA's NOI and accepted.	N/A	N/A	N/A
Not Included in NOI	100	Update the SWMP document and annual report as required in I.D.5.c.(iv) and Part I.D.5.c.(v). <u>Part I.D.5.c.(iv)</u> - The permittee must include in the SWMP a description of the mechanism(s) utilized to comply with each of the elements required in Part I.D.5.c.(i) throughout Part I.D.5.c.(iii) and its corresponding measurable goal, and <u>Part I.D.5.c.(v)</u> - The permittee shall assess the overall success of the program, and document the program effectiveness in the Annual Report.	<u>Part I.D.5.c.(iv)</u> - AMAFCA's Stormwater Quality Engineer will review the program requirements for the above-mentioned SWMP elements during the Annual Report process. The measurable goals in this section of the SWMP are the mechanisms used to comply with the Permit elements. A strategy to implement any new program requirements will be developed as needed. <u>Part I.D.5.c.(v)</u> - The Annual Report will serve as the progress report for this program, if applicable. AMAFCA will incorporate documentation by reference into the Annual Report.	<ul style="list-style-type: none"> As part of the Annual Report process, the Stormwater Quality Engineer will review the program requirements listed in Part I.D.5.c, for the above-mentioned SWMP elements and develop a strategy to implement any new program requirements. The Annual Report will serve as the progress report for this program, if applicable. AMAFCA will incorporate documentation by reference into the Annual Report. 	Update as necessary for SWMP and progress reports submitted with subsequent annual reports, as applicable.	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Engineering Intern, AMAFCA Maintenance Crew, Field Engineer

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
	101	TABLE 5: Industrial and High Risk Runoff - Part I.D.5.d				
4	102	As described in <u>Part I.D.5.d</u> , the permittees shall: (i) control through ordinance, permit, contract, order or similar means, the contribution of pollutants to the municipal storm sewer by stormwater discharges associated with industrial activity and the quality of stormwater discharged from sites of industrial activity as defined in 40 CFR 122.26(b)(14)(i)-(ix) and (xi). If no such industrial activities are in a permittees jurisdiction, that permittee may certify that this program element does not apply.	<u>Part I.D.5.d</u> - Activity removed from AMAFCA's SWMP (Rev. 0, December 1, 2015). AMAFCA certifies with submittal of this SWMP that no such industrial activities are in AMAFCA's jurisdiction and this program element does not apply. This was submitted to EPA in AMAFCA's NOI and accepted.	N/A	N/A	N/A

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
	103	TABLE 6: Illicit Discharges and Improper Disposal - Part I.D.5.e				
See NOI Sections Below	104	As described in <u>Part I.D.5.e.(i)</u> , the permittee shall develop, revise, implement, and enforce a program to detect and eliminate illicit discharges (as defined at 40 CFR 122.26(b)(2)) entering the MS4. Permittees previously covered under NMS000101 or NMR040000 must continue existing programs while updating those programs, as necessary, to comply with the requirements of this permit. The permittee must (see required items listed below):	<u>Part I.D.5.e.(i)</u> - AMAFCA has developed a program to detect and eliminate illicit discharges. The program elements, as they relate to the permit requirements, are described in detail below.	<ul style="list-style-type: none"> The AMAFCA Stormwater Quality Engineer will continue to review, revise, and implement the Illicit Discharge Detection and Elimination Program requirements, as needed. AMAFCA will continue to update the current written procedure for this program element as part of the MS4 Strategies and Procedures Notebook. 	See specific Permit activity schedules below.	See specific Permit activity below.
5.1	105	Mapping as required in <u>Part I.D.5.e.(i)(a)</u> . Develop, if not already completed, a storm sewer system map, showing the names and locations of all outfalls as well as the names and locations of all waters of the United States that receive discharge from those outfalls. Identify all discharges points into major drainage channels draining more than twenty (20) percent of the MS4 area;	<u>Part I.D.5.e.(i)(a)</u> - AMAFCA will continue to update its Maintenance Responsibilities for Drainage Facilities in the Albuquerque Metropolitan Area (Map). This is a color coded, detailed maintenance map showing all AMAFCA facilities (water quality BMPs, channels, large diameter storm drains, ponds, berms or dikes, dams, and receiving waters) and AMAFCA outfalls. AMAFCA cooperates with COA, NMDOT, Bernalillo County, SSCAFCA, Village of Los Ranchos, and MRGCD to collect their data for AMAFCA's map. This map is available on the AMAFCA website: http://www.amafca.org/maps-2/	<ul style="list-style-type: none"> AMAFCA will continue to keep this maintenance map up-to-date for AMAFCA facilities and other MS4 permittee facilities, as information is provided. Cooperation with other MS4s will continue related to this map. AMAFCA will continue to update the map and publish this map on-line. 	14 months (cooperative) from effective date of MS4 Permit February 22, 2016	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Engineering Intern, GIS Manager
5.2	106	Ordinance (or other control method) as required in <u>Part I.D.5.e.(i)(b)</u> .	Because AMAFCA is a flood control authority, the legal authority and jurisdiction granted to it by the State of New Mexico is limited. <u>Part I.D.5.e.(i)(b)</u> - AMAFCA will contractually and/or administratively require the control of non-stormwater discharges from third-party operations within AMAFCA's jurisdiction and/or rights of way to the extent allowable under State, Tribal, or local law.	<ul style="list-style-type: none"> AMAFCA will begin development of contractually and/or administratively requiring the control of non-stormwater discharges on turn-key projects that AMAFCA will take over for operation and maintenance after construction to the extent allowable under State, Tribal, or local law. 	10 months from effective date of MS4 Permit June 22, 2017	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
5.3	107	Develop and implement a IDDE plan as required in <u>Part I.D.5.e.(i).(c)</u> . The permittee must include the following elements in the plan: A. Procedures for locating priority areas likely to have illicit discharges including field tests for selected pollutant indicators (ammonia, boron, chlorine, color, conductivity, detergents, E. coli, enterococci, total coliform, fluoride, hardness, pH, potassium, conductivity, surfactants), and visually screening outfalls during dry weather; B. Procedures for enforcement, including enforcement escalation procedures for recalcitrant or repeat offenders; C. Procedures for removing the source of the discharge; D. Procedures for program evaluation and assessment; and E. Procedures for coordination with adjacent municipalities and/or state, tribal, or federal regulatory agencies to address situations where investigations indicate the illicit discharge originates outside the MS4 jurisdiction.	<u>Part I.D.5.e.(i).(c)</u> - AMAFCA will continue to assess its IDDE program, as appropriate.	<ul style="list-style-type: none"> • AMAFCA will continue to implement the updated IDDE program elements. • AMAFCA will continue membership and involvement in the cooperative MS4 Technical Advisory Group (MS4 TAG) which will facilitate cooperation and coordination with other MS4s in the Middle Rio Grande related to the IDDE program. • AMAFCA will continue development of this program element in its MS4 Strategies and Procedures Notebook. 	30 months (cooperative) from effective date of MS4 Permit June 22, 2017	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, GIS Manager
5.4	108	Develop an education program as required in <u>Part I.D.5.e.(i).(d)</u> . Develop an education program to promote, publicize, and facilitate public reporting of illicit connections or discharges, and distribution of outreach materials. The permittee shall inform public employees, businesses and the general public of hazards associated with illegal discharges and improper disposal of waste.	<u>Part I.D.5.e.(i).(d)</u> - AMAFCA will continue to participate in the MRGSQT and collaborate with the MS4 permittees to provide educational information regarding stormwater quality to the community. This information will promote, publicize, and facilitate public reporting of illicit connections or discharges, and distribution of outreach materials. This program informs the public of hazards associated with illicit discharges and improper waste disposal, as well as proper ways to dispose of hazardous wastes.	<ul style="list-style-type: none"> • AMAFCA will continue work with the MRGSQT to inform the general public of the hazards associated with illegal discharges and improper disposal of waste. • AMAFCA will continue its involvement with and financial support of BEMP and RiverXchange through the MRGSQT. • The MRGSQT Outcomes Report is available upon request and AMAFCA plans to share this document on its website. • AMAFCA will continue an in-house training program for its administrative, engineering, and field employees regarding illegal discharges and improper disposal of waste. 	18 months (cooperative) from effective date of MS4 Permit June 22, 2016	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern
5.5	109	Establish a hotline as required in <u>Part I.D.5.e.(i).(e)</u> .	<u>Part I.D.5.e.(i).(e)</u> - MS4s that are members of the MRGSQT benefit from the Albuquerque 311 Citizen Contact Center. The 311 service is a single telephone number for all non-emergency inquiries and services. This program includes citizen calls regarding illicit discharges.	<ul style="list-style-type: none"> • MS4s in the watershed will continue to participate in the 311 call in program. 	18 months (cooperative) from effective date of MS4 Permit June 22, 2016	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Administrative Assistant, Engineering Intern, Field Engineer, Maintenance Superintendent, GIS Manager, Real Estate

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
5.6	110	Investigate suspected significant/severe illicit discharges as required in Part I.D.5.e.(i).(f) . Investigate suspected significant/severe illicit discharges within forty-eight (48) hours of detection and all other discharges as soon as practicable; elimination of such discharges as expeditiously as possible; and, requirement of immediate cessation of illicit discharges upon confirmation of responsible parties. Illicit Discharge is defined in 40 CFR 122.26(b)(2) as "Illicit discharge means any discharge to a municipal separate storm sewer that is not composed entirely of stormwater except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from fire fighting activities."	Part I.D.5.e.(i).(f) - AMAFCA will continue its policy of investigation of suspected significant/severe illicit discharges within forty-eight (48) hours of detection/reporting and all other discharges as soon as practicable. AMAFCA plans to continue removing/treating such discharges as expeditiously as possible and requiring immediate cessation of illicit discharges upon confirmation of responsible parties. AMAFCA will continue its procedures for illicit discharge investigation and use of its IDDE Incident Report Form. "Illicit discharge" also covers illegal or improper disposal or dumping of wastes into AMAFCA facilities. For AMAFCA, "illicit discharges" typically fall into two categories: (1) liquid discharge, or (2) solid discharge (dumped trash, debris, dirt/sediment, tires). Liquid discharges are considered urgent in order to quickly determine if they are significant/severe illicit discharges and are investigated within forty-eight (48) hours of detection. Solid discharge are investigated and identified for clean-up during the weekly staff meetings.	<ul style="list-style-type: none"> • AMAFCA will continue its policy of investigation of suspected significant/severe illicit discharges within 48 hours of detection and all other discharges as soon as practicable. • MS4s in the watershed will continue to participate in the 311 call in program. • AMAFCA will continue membership and involvement in the cooperative MS4 Technical Advisory Group (MS4 TAG) which will facilitate cooperation and coordination with other MS4s in the Middle Rio Grande related to investigation of illicit discharges. • AMAFCA will continue development of this program element in its MS4 Strategies and Procedures Notebook. 	18 months (cooperative) from effective date of MS4 Permit June 22, 2016	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, AMAFCA Maintenance Crew, Field Engineer, Maintenance Superintendent, Real Estate Manager
5.7	111	Review complaint records and develop a targeted source reduction program as required in Part I.D.5.e.(i).(g) . Review complaint records for the last permit term and develop a targeted source reduction program for those illicit discharge /improper disposal incidents that have occurred more than twice in two (2) or more years from different locations.	Part I.D.5.e.(i).(g) - AMAFCA will continue its policy of reviewing complaint records. In addition, complaint records that are determined to be illicit discharges will be added to the AMAFCA GIS database. The location, date, type of illicit discharge, and source (if known) will be documented. This database was developed in 2014 and is updated annually. To meet the Permit requirements in Table 1.a (Part I.C.2), regarding discharges to impaired waters with a TMDL (E. coli), AMAFCA's review of complaint records will include a focus on illicit discharges contributing bacteria to the MS4. AMAFCA will develop a targeted source reduction program for those illicit discharge/improper disposal incidents that have occurred more than twice in 2 or more years from different locations. AMAFCA coordinates with COA and the Albuquerque Bernalillo Water Utility Authority (ABCWUA) for notification of illicit discharges.	<ul style="list-style-type: none"> • AMAFCA will continue its policy of reviewing complaint records. This will include a focus on illicit discharges contributing bacteria to the MS4. • Annually, AMAFCA will reevaluate its targeted source reduction program. Potential future targets will be determined and cooperative efforts for targeted source reduction programs with MRGSQT members will be considered. • AMAFCA will continue adding illicit discharge complaint records for the Permit term to the AMAFCA GIS database to help identify sources and trends. • AMAFCA will continue development of this program element in its MS4 Strategies and Procedures Notebook. • AMAFCA will continue coordination with other agencies for this program element. 	1 year (cooperative) from effective date of MS4 Permit Dec. 22, 2015	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Administrative Assistant, Engineering Intern, GIS Manager, Real Estate Manager

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
Not Included in NOI	112	As required in <u>Part I.D.5.e.(ii)</u> , the permittee shall address the following categories of non-stormwater discharges or flows (e.g., illicit discharges) only if they are identified as significant contributors of pollutants to the MS4: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(90)), uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, and street wash water. Note: Discharges or flows from fire fighting activities are excluded from the effective prohibitions against non-stormwater and need only be addressed where they are identified as significant sources of pollutants to water of the United States).	<u>Part I.D.5.e.(ii)</u> - Any such discharge that is identified as a significant contributor of pollutants to the AMAFCA MS4, or is causing or contributing to a water quality standards violation, will be addressed as an illicit discharge pursuant to Part I.D.5.e of the MS4 Permit. The Permit lists authorized non-stormwater discharges in Part I.D.5.e.(ii). Many of these authorized non-stormwater discharges are not applicable to AMAFCA and none of these discharges are expected to be significant contributors of pollutants to the MS4. The AMAFCA Stormwater Quality Engineer will continue coordination & communication with ABCWUA regarding well flushing and rehabilitation schedules to ensure that AMAFCA is aware of authorized non-stormwater discharges into its facilities.	<ul style="list-style-type: none"> The AMAFCA Stormwater Quality Engineer will review this list annually to check that the categories of authorized non-stormwater discharges are still not considered significant contributors of pollutants to the MS4. The AMAFCA Stormwater Quality Engineer will communicate with ABCWUA regarding well flushing and rehabilitation schedules to ensure that AMAFCA is aware of authorized non-stormwater discharges into its facilities. 	No permit required schedule, AMAFCA will review annually.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer
5.8	113	As required in <u>Part I.D.5.e.(iii)</u> , the permittee must screen the entire jurisdiction at least once every five (5) years and high priority areas at least once every year. High priority areas include any area where there is ongoing evidence of illicit discharges or dumping, or where there are citizen complaints on more than five (5) separate events within twelve (12) months. The permittee must: (a) Include in its SWMP document a description of the means, methods, quality assurance and controls protocols, and schedule for successfully implementing the required screening, field monitoring, laboratory analysis, investigations, and analysis evaluation of data collected. (b) Comply with the dry weather screening program established in Table 6 and the monitoring requirements specified in Part III.A.2. (c) If applicable, implement the priority ranking system developed in previous permit term.	<p>AMAFCA will continue to make progress with its IDDE activities and program. Much of this effort may be in coordination with MS4 permittees COA, Bernalillo County, and NMDOT, as the AMAFCA facilities are stormwater collectors for the basins that are primarily controlled by other MS4 programs, rules, and regulations.</p> <p><u>Part I.D.5.e.(ii)(a)</u> - IDDE screening methods and protocols for implementing the required screening, field monitoring, laboratory analysis, investigations, and analysis evaluation of data collected has been developed. AMAFCA has in place a well-defined and implemented routine inspection and O&M program that includes both formal and informal inspections. These O&M inspections are part of the IDDE screening program.</p> <p><u>Part I.D.5.e.(ii)(b)</u> - AMAFCA screening procedures and protocols will comply with the dry weather screening program monitoring requirements specified in Part III.A.2 of the MS4 Permit. COA and AMAFCA have a cooperative dry weather screening program. In addition, as part of AMAFCA's Levellogger monitoring, AMAFCA screens all inlets to the NDC on AMAFCA ROW monthly.</p> <p><u>Part I.D.5.e.(ii)(c)</u> - For AMAFCA, facility screening is part of AMAFCA's routine O&M activities. All areas are screened and there are no low priority areas.</p>	<ul style="list-style-type: none"> AMAFCA has developed screening procedures, protocols, and plan. AMAFCA will continue routine inspections through its O&M program, including both formal and informal inspections. These O&M inspections are part of the IDDE screening program. As a cooperative program, COA will continue to perform dry weather screening. AMAFCA will screen major channelized inlets to the NDC on AMAFCA ROW monthly through its Levellogger monitoring program. AMAFCA will continue membership and involvement in the cooperative MRGSQT and TAG, which will facilitate cooperation and coordination with other MS4s in the Middle Rio Grande related to screening for illicit discharges. 	<p>Cooperative program -</p> <p>High Priority - screen 1x per year.</p> <p>-Years 1 -3: develop procedures as required in Part I.D.5.e.(i).(c).</p> <p>-Year 4: screen 30% of the MS4 area.</p> <p>-Year 5: screen 70% of the MS4 area.</p>	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation:</u> Engineering Intern, Field Engineer, Maintenance Supervisor, GIS Manager</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
5.9	114	Develop, update, and implement a Waste Collection Program as required in Part I.D.5.e.(iv) .	Part I.D.5.e.(iv) - Activity removed from AMAFCA's SWMP. Public waste collection is the responsibility of the municipalities. AMAFCA does not have the jurisdictional authority to perform these activities. AMAFCA will continue to regularly collect waste within its rights-of-way. This was submitted to EPA in AMAFCA's NOI and accepted.	N/A	N/A	N/A
5.10	115	Develop, update and implement a Spill Prevention and Response program to prevent, contain, and respond to spills that may discharge into the MS4 as required in Part I.D.5.e.(v) . The Spill Prevention and Response program shall include: (a) Where discharge of material resulting from a spill is necessary to prevent loss of life, personal injury, or severe property damage, the permittee(s) shall take, or ensure the party responsible for the spill takes, all reasonable steps to control or prevent any adverse effects to human health or the environment; and (b) The spill response program may include a combination of spill response actions by the permittee (and/or another public or private entity), and legal requirements for private entities within the permittee's municipal jurisdiction.	Part I.D.5.e.(v) - AMAFCA will continue its Spill Prevention and Response program. This program element relates to Illicit Discharge, reporting requirements, crew training, spill response materials on hand (in maintenance vehicles), and good housekeeping. For AMAFCA facilities, AMAFCA encourages that crew members are trained in spill prevention and control (refer to Pollution Prevention/Good Housekeeping Control Measure).	<ul style="list-style-type: none"> • AMAFCA will continue development of its cooperative Spill Response Program with agency partners and as part of its MS4 Strategies and Procedures Notebook. • AMAFCA encourages that crew members are trained in spill prevention and control (refer to Pollution Prevention/Good Housekeeping Control Measure). • AMAFCA will continue membership and involvement in the cooperative MS4 TAG and the MRGSQT, which will facilitate cooperation and coordination with other MS4s in the Middle Rio Grande related to spill prevention and response. 	18 months (cooperative) from effective date of MS4 Permit June 22, 2016	Program Lead: AMAFCA's Stormwater Quality Engineer Program Implementation: Engineering Intern, AMAFCA Maintenance Crew, Field Engineer, Maintenance Superintendent, Real Estate Manager
Not Included in NOI	116	Part I.D.5.e.(vi) - The permittee must include in the SWMP a description of the mechanism(s) utilized to comply with each of the elements required in Part I.D.5.e.(i) through Part I.D.5.e.(v) and its corresponding measurable goal. A description of the means, methods, quality assurance and controls protocols, and schedule for successfully implementing the required screening, field monitoring, laboratory analysis, investigations, and analysis evaluation of data collected; and Part I.D.5.e.(vii) - The permittee shall assess the overall success of the program, and document the program effectiveness in the Annual Report.	<p>Part I.D.5.e.(vi) - AMAFCA's Stormwater Quality Engineer will review the program requirements listed for the above-mentioned program elements, during the Annual Report process. A review of the screening completed and the data collected, if any, will be available upon request and AMAFCA will incorporate documentation by reference into the Annual Report and plans to document progress on the AMAFCA website. A strategy to implement any new program requirements will be developed as needed. AMAFCA will maintain and update, as necessary, its MS4 Strategies and Procedures Notebook for this MS4 Program.</p> <p>Part I.D.5.e.(vii) - AMAFCA will document the program effectiveness and program success. AMAFCA will incorporate documentation by reference into the Annual Report.</p>	<ul style="list-style-type: none"> • As part of the Annual Report process each year, the Stormwater Quality Engineer will review the program requirements listed in Part I.D.5.e, for the above-mentioned SWMP elements, and develop a strategy, if applicable, to implement any new program requirements. • A review of the screening completed and the data collected, if any, will be available upon request and AMAFCA will incorporate documentation by reference into the Annual Report and plans to document progress on the AMAFCA website. • AMAFCA will document the program effectiveness and program success. AMAFCA will incorporate documentation by reference into the Annual Report. 	Update as necessary for SWMP and progress reports submitted with subsequent annual reports, as applicable.	Program Lead: AMAFCA's Stormwater Quality Engineer Program Implementation: Engineering Intern, GIS Manager

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
5.11	117	Enhance the program to include requirements in <u>Part I.D.5.e.(ix)</u> . The permittee may: (a) Divide the jurisdiction into assessment areas where monitoring at fewer locations still provides sufficient information; (b) Downgrade high priority areas after the area has been screened at least once and there are citizen complaints on no more than 5 separate events within a 12 month period; (c) Rely on a cooperative program with other MS4s for detection and elimination of illicit discharges and illegal dumping; (d) If cooperative program, required detection program frequencies may be based on the combined jurisdictional area rather than individual jurisdictional areas to reduce total number of screening locations; (e) After screening a non-high priority area once, adopt an "in response to complaints only" IDDE for that area (no more than 2 separate events within a 12 month period); (f) Enhance the program to utilize methodologies consistent with those described in "Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments."	<u>Part I.D.5.e.(ix).(a)</u> - AMAFCA operates and maintains Leveloggers and rainfall gauges for the NDC watershed to better understand runoff and evaluate monitoring locations. Future telemetry project will add screening capabilities for other outfalls. <u>Part I.D.5.e.(ix).(b)</u> - This enhancement may be considered and included in the future. <u>Part I.D.5.e.(ix).(c)</u> - AMAFCA currently coordinates with MS4s, as appropriate, and the ABCWUA for notification of illicit discharges. AMAFCA will continue to pursue developing similar cooperative coordination with other agencies. <u>Part I.D.5.e.(ix).(d) and (e)</u> - These cooperative elements may be considered in the future. <u>Part I.D.5.e.(ix).(f)</u> - AMAFCA had a consultant evaluate the AMAFCA IDDE program and develop recommendations for improving the program in order to comply with the MS4 Permit. The report included evaluating the procedures and methodologies described in "IDDE, A Guidance Manual for Program Development and Technical Assessments", for incorporation into AMAFCA's IDDE program. AMAFCA will continue to implement recommendations from this report, as appropriate.	• AMAFCA will document progress made, if any, with these program enhancement activities.	No Permit required schedule.	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Engineering Intern, Field Engineer, Maintenance Superintendent, GIS Manager, Real Estate Manager
5.12	118	Item from MS4 Permit NOI. Describe other proposed activities to address the Illicit Discharges and Improper Disposal Measure.	AMAFCA will continue to utilize the Annual Report process as a means to perform a self-audit with the goal to improve its MS4 Programs.	• AMAFCA will annually document progress made, if any, related to the Annual Report and SWMP revision process as a means to perform a self-audit on the MS4 Program elements.	No Permit required schedule. Ongoing requirement of the MS4 Permit.	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
	119	TABLE 7: Control of Floatables Discharges - Part I.D.5.f				
6.1	120	As required in <u>Part I.D.5.f.(i)</u> , the permittee must develop, update, and implement a program to address and control floatables in discharges into the MS4. The floatables control program shall include source controls and, where necessary, structural controls. Permittees previously covered under NMS000101 or NMR04A000 must continue existing programs while updating those programs, as necessary, to comply with the requirements of this permit. The permittee shall develop or update a schedule to implement as required in <u>Part I.D.5.f.(i).(a)</u> . Note: AMAFCA and COA should update the schedule according to the findings of the 2005 AMAFCA/COA Floatable and Gross Pollutant Study and other studies.	<u>Part I.D.5.f.(i) and (i).(a)</u> - AMAFCA will continue to implement a program to address and control floatables in discharges into the MS4. AMAFCA will continue to install stormwater quality features to control floatables, such as ported risers, trash racks, and screened inlets in both new construction and retrofits where appropriate. AMAFCA will continue to coordinate with COA relative to structural BMPs within AMAFCA rights-of-way.	<ul style="list-style-type: none"> • The AMAFCA Stormwater Quality Engineer will continue to review, revise, and implement a program to address and control floatables in discharges into the MS4. AMAFCA will develop a written procedure for this program element. • AMAFCA will continue to cooperate and coordinate with COA relative to structural BMPs within AMAFCA rights-of-way. • AMAFCA will continue membership and involvement in the cooperative MS4 Technical Advisory Group (MS4 TAG), which will facilitate cooperation and coordination with other MS4s in the Middle Rio Grande related control of floatables discharges. • AMAFCA will continue utilizing the manual trash collection contracts. • AMAFCA is pursuing developing a cooperative program for this program element. 	18 months (cooperative) from effective date of MS4 Permit June 22, 2016	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, AMAFCA Maintenance Crew, Field Engineer, Maintenance Superintendent
6.2	121	Estimate the annual volume of floatables and trash removed from each control facility and characterize the floatable type as required in <u>Part I.D.5.f.(i).(b)</u> .	<u>Part I.D.5.f.(i).(b)</u> - AMAFCA will continue to estimate the annual volume of floatables and trash removed from each control facility as well as to characterize the floatable type. The AMAFCA operations and maintenance crew and subcontractors track the volume of floatables, sediment, trash, and debris removed from AMAFCA facilities. This tracking procedure includes the location of removal by facility and watershed.	<ul style="list-style-type: none"> • AMAFCA will continue to estimate the annual volume of floatables and trash removed from each control facility and characterize the floatable type. • AMAFCA will continue to utilize crew activity tracking, allowing AMAFCA to better and more easily determine the volume of floatables and sediment removed from each AMAFCA facility. • AMAFCA has updated, cooperative waste characterization study in the watershed during the Permit term. 	10 months from effective date of MS4 Permit Oct. 22, 2015	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern, AMAFCA Maintenance Crew, Development Review Engineer, Drainage Engineer, Field Engineer, Maintenance Superintendent
6.3	122	Item from MS4 Permit NOI. Describe other proposed activities to address the Control of Floatables Discharges Measure.	AMAFCA will continue to utilize the Annual Report and SWMP revision process as a means to perform a self-audit with the goal to improve its MS4 Programs.	• AMAFCA will document progress made, if any, related to the Annual Report and SWMP revision process as a means to perform a self-audit on the MS4 Program elements.	No Permit required schedule. Ongoing requirement of the MS4 Permit.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
Not Included in NOI	123	Update the SWMP document and Annual Report as required in Part I.D.5.f.(ii) and Part I.D.5.f.(iii). <u>Part I.D.5.f.(ii)</u> - The permittee must include in the SWMP a description of the mechanism(s) utilized to comply with each of the elements required in Part I.D.5.f.(i). <u>Part I.D.5.f.(iii)</u> - The permittee shall assess the overall success of the program, and document the program effectiveness in the Annual Report.	<u>Part I.D.5.f.(ii)</u> - AMAFCA's Stormwater Quality Engineer will review the program requirements listed for the above-mentioned program elements, during the Annual Report process. A strategy to implement any new program requirements or improve the compliance with program requirements will be developed as needed. <u>Part I.D.5.f.(iii)</u> - AMAFCA will document the program effectiveness and program success. AMAFCA will incorporate documentation by reference into the Annual Report.	• As part of the Annual Report process each year, the Stormwater Quality Engineer will review the program requirements listed in Part I.D.5.f, for the above-mentioned SWMP elements, and assess the overall success of the program. AMAFCA will document the program effectiveness and program success. AMAFCA will incorporate documentation by reference into the Annual Report.	Update as necessary for SWMP and progress reports submitted with subsequent annual reports, as applicable.	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Engineering Intern, AMAFCA Maintenance Crew, Field Engineer, Maintenance Superintendent

NPDES Permit No. NMR04A000
AMAFCA SWMP

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	124	TABLE 8: Public Education and Outreach on Stormwater Impacts - Part I.D.5.g				
7.1	125	Develop, revise, implement, and maintain an education and outreach program as required in Part I.D.5.g.(i) and Part I.D.5.g.(ii) . This comprehensive stormwater program should educate the community, employees, businesses, and the general public of hazards associated with the illegal discharges and improper disposal of waste and about the impact that stormwater discharges on local waterways, as well as the steps that the public can take to reduce pollutants in stormwater.	Part I.D.5.g.(i) - Through involvement in the MRGSQT and Bernalillo County, AMAFCA will continue to collaborate with the MS4 permittees to implement and improve upon the existing Public Education and Outreach program. The MRGSQT has a consulting firm under contract to act as Stormwater Coordinator and assist the team in providing public education and outreach on stormwater impacts. Included in the Stormwater Coordinator scope is to provide an Outcomes Report to the team members to summarize the yearly outreach activities through different media and methods, target audiences, and estimate of people reached. In addition to the cooperative elements with MRGSQT, AMAFCA will continue to conduct education and outreach presentations to the community specific to AMAFCA facilities and water quality.	<ul style="list-style-type: none"> AMAFCA will continue to contribute to and participate in the MRGSQT. AMAFCA will continue to conduct education and outreach presentations to the community specific to AMAFCA facilities and water quality. AMAFCA's efforts will be included in the MRGSQT Outcomes Report. This report is available upon request and AMAFCA plans to share this document on its website. 	14 months (cooperative) from effective date of MS4 Permit February 22, 2016	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern
Not Included in NOI	126	Part I.D.5.g.(ii) , the permittee must implement a public education program to distribute educational knowledge to the community or conduct equivalent outreach activities about the impacts of storm water discharges on water bodies and the steps that the public can take to reduce pollutants in storm water runoff. The permittee must: Part I.D.5.g.(ii)(a) , Define the goals and objectives of the program based on high priority community-wide issues; Part I.D.5.g.(ii)(b) , Develop or utilize appropriate educational materials, such as printed materials, billboard and mass transit advertisements, signage at select locations, radio advertisements, television advertisements, and websites.	<p>Part I.D.5.g.(ii)(a) - The MRGSQT has developed a matrix to define the Public Education and Outreach objectives, priorities, and target audiences. The matrix will be reviewed and updated, as necessary, throughout the Permit term.</p> <p>Part I.D.5.g.(ii)(b) - The MRGSQT will continue to develop and utilize appropriate educational materials such as brochures, media campaigns, public presentations/events, giveaways, display booths/kiosks, signage at select locations, and postings on social media sites (Facebook) and websites. The types of materials utilized by the MRGSQT are summarized in the annual Outcomes Report.</p>	<ul style="list-style-type: none"> AMAFCA, through its participation in the MRGSQT will review, throughout the Permit term, and update, as necessary, the program matrix to define the Public Education and Outreach and Public Involvement and Participation objectives, priorities, and target audiences. The MRGSQT will continue to develop and utilize appropriate educational materials such as brochures, media campaigns, public presentations/events, giveaways, display booths/kiosks, signage at select locations, and postings on social media sites (Facebook) and websites. 	14 months (cooperative) from effective date of MS4 Permit February 22, 2016	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern

NPDES Permit No. NMR04A000
AMAFCA SWMP

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Not Included in NOI	127	Part 1.D.5.g.(ii)(c), Inform individuals and households about ensuring proper septic system maintenance, ensuring the proper use and disposal of landscape and garden chemicals including fertilizers and pesticides, protecting and restoring riparian vegetation, and properly disposing of used motor oil or household hazardous wastes;	Part 1.D.5.g.(ii)(c) - The MRGSQT's program matrix and Public Education and Outreach programs include proper septic system maintenance, proper use and disposal of landscape and garden chemicals including fertilizers and pesticides, and properly disposing of household hazardous wastes.	• The MRGSQT will continue to include these specific educational areas in their program matrix and reporting on these areas in their annual Outcomes Report.	14 months (cooperative) from effective date of MS4 Permit February 22, 2016	Program Lead: AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern

NPDES Permit No. NMR04A000
AMAFCA SWMP

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Not Included in NOI	128	<u>Part I.D.5.g.(ii).(d)</u> , Inform individuals and groups how to become involved in local stream and beach restoration activities as well as activities that are coordinated by youth service and conservation corps or other citizen groups.	<u>Part I.D.5.g.(ii).(d)</u> - The MRGSQT, which AMAFCA is a member, utilizes volunteers throughout communities within the watershed to assist with park, open space, trail, and river cleanup projects. Communication for Public Education and Outreach and Public Involvement and Participation is achieved by activities organized with youth service groups, conservation corps, and other citizen groups. In addition, AMAFCA will continue to foster Public Education and Outreach and Public Involvement and Participation programs, including Earth Force - Keep it Clean student outreach, Talking Talons Youth Leadership Activities, and Rocky Mountain Youth Corps programs.	<ul style="list-style-type: none"> The MRGSQT will continue communication for public involvement and participation activities as well as assist with communication for Public Education and Outreach and Public Involvement and Participation activities organized by youth service groups, conservation corps, and other citizen groups. These volunteer activities will be summarized in the annual MRGSQT Outcomes Report. The MRGSQT Outcomes Report is available upon request and AMAFCA plans to share this document on its website. Through the MRGSQT, two partner education programs, BEMP and RiverXchange, are supported. RiverXchange is an innovative, long-term outreach program that integrates water resource topics with computer technology, student writing, and a hands-on curriculum to meet specific, measurable outcomes. The main objective of the Stormwater Science outreach education program BEMP is to teach students that the health of the Rio Grande is directly related to the health of the surrounding watershed. AMAFCA will continue to foster Public Education and Outreach and Public Involvement and Participation programs, including Earth Force, Talking Talons Youth Leadership Activities, and Rocky Mountain Youth Corps programs. 	14 months (cooperative) from effective date of MS4 Permit February 22, 2016	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Engineering Intern
Not Included in NOI	129	<u>Part I.D.5.g.(ii).(e)</u> , Use tailored public education program, using a mix of locally appropriate strategies, to target specific audiences and communities. Examples of strategies include distributing brochures or fact sheets, sponsoring speaking engagements before community groups, providing public service announcements, implementing educational programs targeted at school age children, and conducting community-based projects such as storm drain stenciling, and watershed cleanups;	<u>Part I.D.5.g.(ii).(e)</u> - The MRGSQT will continue to organize comprehensive Public Education and Outreach programs with appropriate strategies to target specific audiences in the Middle Rio Grande community.	<ul style="list-style-type: none"> The MRGSQT will continue to include comprehensive education programs with appropriate strategies to target specific audiences in the Middle Rio Grande community. The target audiences for the educational programs will be identified in the Outcomes Report. 	14 months (cooperative) from effective date of MS4 Permit February 22, 2016	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Engineering Intern

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
Not Included in NOI	130	<u>Part I.D.5.g.(ii).(f)</u> , Use materials or outreach programs directed toward targeted groups of commercial, industrial, and institutional entities likely to have significant stormwater impacts. For example, providing information to restaurants on the impact of grease clogging storm drains and to garages on the impact of oil discharges. The permittee may tailor the outreach program to address the viewpoints and concerns of all communities, particularly minority and disadvantaged communities, as well as any special concerns relating to children. The permittee must make information available for non-English speaking residents, where appropriate.	<u>Part I.D.5.g.(ii).(f)</u> - The MRGSQT will continue to include Public Education and Outreach programs directed toward commercial, industrial, engineering/contractors, and other institutional entities to meet the MS4 Permit requirements. Where outreach target groups include Spanish-speaking residents, MRGSQT may have Spanish-translations available of public meeting announcements and data sheets. The need for bi-lingual outreach will be assessed by the MRGSQT as needed.	<ul style="list-style-type: none"> The MRGSQT cooperative programs will continue to include information on Public Education and Outreach and Public Involvement and Participation programs directed toward commercial, industrial, engineering/contractors, and other institutional entities. Where outreach target groups include Spanish-speaking residents, MRGSQT may have Spanish-translations available of public meeting announcements and data sheets. The need for bi-lingual outreach will be assessed by the MRGSQT as needed. 	14 months (cooperative) from effective date of MS4 Permit February 22, 2016	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Engineering Intern
7.2	131	<p>Update the SWMP document and Annual Report as required in Part I.D.5.g.(iii) and Part I.D.5.g.(iv).</p> <p><u>Part I.D.5.g.(iii)</u>. The permittee must include the following information in the SWMP document:</p> <p>(a) A description of a program to promote, publicize, facilitate public reporting of the presence of illicit discharges or water quality associated with discharges from MS4s;</p> <p>(b) A description of the education activities, public information activities, and other appropriate activities to facilitate the proper management and disposal of used oil and toxic materials;</p> <p>(c) A description of the mechanism(s) utilized to comply with each of the elements required in Part I.D.5.g.(i) and Part I.D.5.g.(ii) and its corresponding measurable goal.</p> <p><u>Part I.D.5.g.(iv)</u>. The permittee must assess the overall success of the program, and document both direct and indirect measurements of program effectiveness in the Annual Report.</p>	<p><u>Part I.D.5.(g).(iii) - (a)</u> MS4s that are members of the MRGSQT benefit from the Albuquerque 311 Citizen Contact Center. Reports for illicit discharge can be done by phone, on-line, e-mail, or through an app on cellular phones.</p> <p><u>(b)</u> Educational and public outreach activities are primarily handled through the MRGSQT.</p> <p><u>(c)</u> This SWMP, AMAFCA's Annual Reports, and the MRGSQT outreach coordinator contract all serve as mechanisms to comply with the elements in this section of the permit. Refer to the above SWMP program elements for additional information. AMAFCA's Stormwater Quality Engineer will review the program requirements listed for the above-mentioned program elements during the SWMP update and Annual Report process. A strategy to implement any new program requirements or improve compliance with the program requirements will be discussed with the MRGSQT and developed as needed.</p> <p><u>Part I.D.5.(g).(iv)</u> - AMAFCA will document the program effectiveness and program success. AMAFCA will incorporate documentation by reference into the Annual Report and plans to document progress on the AMAFCA website.</p>	<ul style="list-style-type: none"> The AMAFCA Stormwater Quality Engineer will review and include the program requirements listed in Part I.D.5.g during the SWMP update and Annual Report process. AMAFCA will document the program effectiveness and program success. AMAFCA will incorporate documentation by reference into the Annual Report and plans to document progress on the AMAFCA website. AMAFCA (both through the MRGSQT and individually) will use surveys to assist with determining the effectiveness of programs. 	Update as necessary for SWMP and progress reports submitted with subsequent annual reports, as applicable.	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Engineering Intern

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
7.2	132	Enhance the program to include Program Flexibility Elements in Part I.D.5.g.(v) through Part I.D.5.g.(viii). <u>Part I.D.5.g.(v)</u> . Where necessary to comply with the MS4 Permit, the permittee should develop a program or modify/revise an existing education and outreach program to: (a) Promote, publicize, and facilitate the use of GI/LID/Sustainability practices; and (b) Include an integrated public education program regarding litter reduction, reduction in pesticide/herbicide use, recycling, and disposal (including yard waste, hazardous waste materials, and used motor vehicle fluids), and GI/ LID/ Sustainable practices (as allowed by the NM OSE).	<u>Part I.D.5.g.(v).(a) and (b)</u> - AMAFCA will continue to include in its (and in the cooperative MRGSQT) Public Education and Outreach program: GI/LID/sustainability practices, litter reduction, herbicide and pesticide proper use and reduction (AMAFCA does not apply fertilizers in its operations), recycling, proper disposal of hazardous waste, proper disposal motor vehicle fluids, and proper disposal of yard waste.	• AMAFCA will document progress made with these program enhancement activities.	No Permit required schedule.	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Engineering Intern
Not Included in NOI	133	Enhance the program to include Program Flexibility Elements in Part I.D.5.g.(v) through Part I.D.5.g.(viii) [continued] <u>Part I.D.5.g.(vi)</u> . The permittee may collaborate or partner with other MS4 operators to maximize the program and cost effectiveness of the required outreach.	<u>Part I.D.5.g.(vi)</u> - The MRGSQT is a cooperative effort allowing watershed MS4 participants to maximize their education, outreach, participation, and involvement programs in a cost effective manner. Through involvement in the MRGSQT, AMAFCA will continue to collaborate with the MS4 permittees to implement and improve upon the existing Public Education and Outreach and Public Involvement and Participation programs.	• AMAFCA will continue to contribute to and participate in the MRGSQT in order to maximize their Public Education and Outreach and Public Involvement and Participation programs in a cost effective manner.	No Permit required schedule.	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Engineering Intern
Not Included in NOI	134	Enhance the program to include Program Flexibility Elements in Part I.D.5.g.(v) through Part I.D.5.g.(viii) [continued] <u>Part I.D.5.g. (vii)</u> . The education and outreach program may use citizen hotlines as a low-cost strategy to engage the public in illicit discharge surveillance.	<u>Part I.D.5.g.(vii)</u> - MS4s that are members of the MRGSQT benefit from the Albuquerque 311 Citizen Contact Center. The 311 service is a single telephone number for all non-emergency inquiries and services. This program includes citizen calls regarding illicit discharges and notifies AMAFCA of such calls within its jurisdiction.	• MS4s that are members of the MRGSQT benefit from the Albuquerque 311 Citizen Contact Center. This is discussed in more detail in the Illicit Discharges and Improper Disposal Control Measure.	No Permit required schedule.	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Administrative Assistant, Engineering Intern, Real Estate Manager

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
Not Included in NOI	135	<p>Enhance the program to include Program Flexibility Elements in Part I.D.5.g.(v) through Part I.D.5.g.(viii). [continued]</p> <p><u>Part I.D.5.g. (viii)</u>. The permittee may use stormwater educational materials provided by the State, Tribe, EPA, environmental groups, public interest or trade organ., or other MS4s. The permittee may also integrate the education and outreach program with existing education and outreach programs in the MRG area. Examples of existing programs include: Classroom education on stormwater that allows students to develop watershed map to help students visualize area impacted and develop pet specific education. As well as education and outreach programs for commercial activities, lawn and garden activities, sustainable practices, pet waste management, proper disposal of household waste, trash management, water conservation practices designed to reduce pollutants in stormwater for home residences. Existing programs should include regular employee trainings with industry groups and contribute and participate in Stormwater Quality Team.</p>	<p><u>Part I.D.5.g.(viii)</u> - The MRGSQT may utilize educational materials provided by the State, Tribe, EPA, environmental groups, public interest or trade organizations, or other MS4s.</p>	<ul style="list-style-type: none"> The MRGSQT may utilize materials, as appropriate, provided by the State, Tribe, EPA, environmental groups, public interest or trade organizations, or other MS4s. The types of materials and program focus for the materials utilized will be summarized in the annual MRGSQT Outcomes Report. This report is available upon request and AMAFCA plans to share this document on its website. 	No Permit required schedule.	<p><u>Program Lead</u>: AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation</u>: Engineering Intern</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
	136	TABLE 9: Public Involvement and Participation - Part I.D.5.h				
8.1	137	Develop (or update), implement, and maintain a public involvement and participation plan as required in <u>Part I.D.5.h.(ii)</u> . This plan should provide opportunities for participation in the review, modification and implementation of the SWMP; develop and implement a process by which public comments to the plan are received and reviewed by the person(s) responsible for the SWMP; and make the SWMP available to the public and to the operator of any MS4 or Tribal authority receiving discharges from the MS4.	<u>Part I.D.5.h.(ii)</u> - AMAFCA will continue its Public Involvement and Participation program to encourage public involvement in the review, modification and implementation of the AMAFCA SWMP.	<ul style="list-style-type: none"> • AMAFCA will post the draft SWMP, any SWMP amendments or modifications, and draft Annual Reports to the www.amafca.org website with an explanation of the public comment period and instructions on how to submit comments. The posted documents will provide explanations of substantial changes, if applicable. • At least 30-days prior to submission of each updated SWMP, AMAFCA will provide public notice and make a draft copy of the updated SWMP available for public review and comment. • At least 45-days prior to submission of each Annual Report, AMAFCA will provide public notice and make a draft copy of the Annual Report available for public review and comment, as required in Part III.B of the MS4 Permit. • AMAFCA will implement, and update as needed, the Public Involvement and Participation Plan. 	10 months from effective date of MS4 Permit Oct. 22, 2015	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern
8.1	138	As required in <u>Part I.D.5.h.(iii)</u> , the Public Involvement and Participation Plan shall include a comprehensive planning process which involves public participation and where necessary intergovernmental coordination. The permittee must include the following elements in the plan: (a) A detailed description of the general plan for informing the public of involvement and participation opportunities, including types of activities; target audiences; how interested parties may access the SWMP; and how the public was involved in development of the SWMP; (b) The development and implementation of at least one (1) assessment of public behavioral change following a public education and/or participation event; (c) A process to solicit involvement by environmental groups, environmental justice communities, civic organizations or other neighborhoods/organizations interested in water quality-related issues; and (d) An evaluation of opportunities to utilize volunteers for stormwater pollution prevention activities and awareness throughout the area.	<u>Part I.D.5.h.(iii)</u> - As allowed in this Permit section's "Program Flexibility Elements", AMAFCA, through its involvement with the MRGSQT, has integrated this section of the Public Involvement and Participation program with the existing Public Education and Outreach programs in the Middle Rio Grande area. The program includes: (a) A general plan for public of involvement and participation opportunities, including types of activities; target audiences; how interested parties may access the SWMP; and how to encourage public involvement in development and updates of the SWMP; (b) The development and implementation of water quality surveys to assess public knowledge and behavioral change following a public education and/or participation event; (c) A process to solicit involvement in development and updates of the SWMP through following the 45-day Annual Report and 30-day SWMP public comment period; and (d) An evaluation of opportunities to utilize volunteers for stormwater pollution prevention activities, including maintaining Mutt Mitt stations.	<ul style="list-style-type: none"> • AMAFCA will contribute and participate in the MRGSQT, which participates in public events and solicits public participation and feedback by way of volunteer participation and water quality surveys. Both the BEMP and RiverXchange program include participation metrics. In addition, the MRGSQT has developed and will include surveys for public behavior changes and feedback at their events. • AMAFCA will continue to follow the 45-day Annual Report and 30-day SWMP public comment period during the term of this Permit. • AMAFCA will continue to provide Mutt Mitt stations and seek volunteers to maintain the stations. AMAFCA will continue tracking this activity and reviewing metrics during the term of this Permit. 	1 year (cooperative) from effective date of MS4 Permit Dec. 22, 2015	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
8.2	139	Comply with State, Tribal, and local notice requirements when implementing a Public Involvement and Participation Program as required in Part I.D.5.h.(iv) . Reporting notification requirements also in Part III.D.4 .	Part I.D.5.h.(iv) & Part III.D.4 - AMAFCA will provide digital copies of all MS4 compliance reporting documents to the NMED, Pueblos of Sandia and Isleta as required of the MS4 Permit. The SWMP and Annual Reports are also available on the amafca.org website.	<ul style="list-style-type: none"> • AMAFCA will provide digital copies of MS4 compliance reporting documents, as appropriate, to the NMED, Pueblos of Sandia and Isleta as required here and in Part III.D.4 of the MS4 Permit. • AMAFCA will continue to post the SWMP and Annual Reports on the www.amafca.org website. 	10 months from effective date of MS4 Permit Oct. 22, 2015	Program Lead : AMAFCA's Stormwater Quality Engineer Program Implementation : Engineering Intern
8.3	140	Include elements as required in Part I.D.5.h.(v) . The public participation process must reach out to all economic and ethnic groups. Opportunities for members of the public to participate in program development and implementation include serving as citizen representatives on a local stormwater management panel, attending public hearings, working as citizen volunteers to educate other individuals about the program, assisting in program coordination with other preexisting programs, or participating in volunteer monitoring efforts.	Part I.D.5.h.(v) - As allowed in this Permit section's "Program Flexibility Elements", AMAFCA, through its involvement with the MRGSQT cooperative programs, has integrated this section of the Public Involvement and Participation program with existing Public Education and Outreach programs in the Middle Rio Grande area. AMAFCA will continue to include stormwater quality information for the public at events, including public meetings. AMAFCA may have Spanish translations, as needed, of public meeting announcements and data sheets.	<ul style="list-style-type: none"> • AMAFCA will continue to include (along with the cooperative MRGSQT programs) water quality information for the public at events, including public meetings. Where neighborhoods include Spanish-speaking residents, MRGSQT may have Spanish-translations available of public meeting announcements and data sheets. By attending a variety of events at widespread locations throughout the area and by using the leading area newspaper (Albuquerque Journal) to advertise events, the MRGSQT ensures that a wide-range of economic and ethnic groups are reached, as documented in the Outreach Report. • AMAFCA will use the Watershed Protection Advisory Board, Public Involvement Committee as a mechanism to reach out to the community for volunteers and to solicit input through public meetings and discussions. 	18 months (cooperative) from effective date of MS4 Permit June 22, 2016	Program Lead : AMAFCA's Stormwater Quality Engineer Program Implementation : Engineering Intern

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
8.4	141	Update the SWMP document and Annual Report as required in <u>Part I.D.5.h.(vi)</u> , <u>Part I.D.5.h.(vii)</u> , and <u>Part I.D.5.h.(viii)</u> . The permittee must include in the SWMP a description of the mechanisms utilized to comply with each of the elements required in Parts I.D.5.h.(i) through part I.D.5.h.(iv) and its corresponding measurable goal. The permittee shall assess the overall success of the program, and document the program effectiveness in the Annual Report. The permittee must provide public accessibility of the SWMP and Annual Reports online via the Internet and during normal business hours at the MS4 operator's main office for public inspection and copying consistent with any applicable federal, state, tribal, or local open records requirements. Upon a showing of significant public interest, the MS4 operator is encouraged to hold a public meeting (or include in the agenda of in a regularly scheduled city council meeting, etc.) on the NOI, SWMP, and Annual Reports.	<u>Part I.D.5.h.(vi)</u> - AMAFCA's Stormwater Quality Engineer will review the program requirements listed for the above-mentioned program elements during the SWMP update and Annual Report process. A strategy to implement any new program requirements or improve compliance with the program requirements will be discussed with the MRGSQT, if applicable, and developed as needed. <u>Part I.D.5.h.(vii)</u> - AMAFCA will document the program effectiveness and program success. AMAFCA will incorporate documentation by reference into the Annual Report. <u>Part I.D.5.h.(viii)</u> - AMAFCA will provide public accessibility of the SWMP and Annual Reports online via the Internet on the www.amafca.org website. At least 30-days prior to submission of each updated SWMP, AMAFCA will provide public notice and make a draft copy of the updated SWMP available for public review and comment and at least 45-days prior to submission of each Annual Report, AMAFCA will provide public notice and make a draft copy of the Annual Report available for public review and comment, as required in Part III.B of the MS4 Permit.	<ul style="list-style-type: none"> The AMAFCA Stormwater Quality Engineer will review and include the program requirements listed in Part I.D.5.g during the SWMP update and Annual Report process. AMAFCA will document the program effectiveness and program success. AMAFCA will incorporate documentation by reference into the Annual Report. AMAFCA will provide public accessibility of the current SWMP document and the most recent Annual Report online via the Internet on the www.amafca.org website. 	Update as necessary for SWMP and progress reports submitted with subsequent annual reports, as applicable.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern
8.5	142	Enhance the program to include requirements in <u>Part I.D.5.h.(ix)</u> . The permittee may integrate the public involvement and participation program with existing education and outreach programs in the Middle Rio Grande area. Example of existing programs include: Adopt-A-Stream Programs; Attitude Surveys; Community Hotlines (e.g. establishment of a '311'-type number and system established to handle storm-water-related concerns, setting up a public tracking/reporting.	<u>Part I.D.5.h.(ix)</u> - AMAFCA will continue to include in its (and in the cooperative MRGSQT programs) public involvement and participation programs: funds toward groups which include public participation, such as Boy or Girl Scouts of America, RiverXchange, the Bosque Ecosystem Monitoring Program (BEMP), Earth Force - Keep it Clean student outreach, Talking Talons Youth Leadership Activities, and Youth Corps programs. MS4s that are members of the MRGSQT benefit from the Albuquerque 311 Citizen Contact Center.	<ul style="list-style-type: none"> AMAFCA will document progress made with these program enhancement activities. AMAFCA and the MRGSQT will continue to review, update, and enhance public involvement and participation programs. The MRGSQT Outcomes Report will provide the documentation for this Permit activity. This report is available upon request and AMAFCA plans to share this document on its website. MS4s that are members of the MRGSQT benefit from the Albuquerque 311 Citizen Contact Center. This is discussed in more detail in the Illicit Discharges and Improper Disposal Control Measure. 	No Permit required schedule.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Administrative Assistant, Engineering Intern, Real Estate Manager
8.6	143	Item from MS4 Permit NOI. Describe other proposed activities to address the Public Involvement and Participation Measure.	AMAFCA will continue to utilize the Annual Report and SWMP revision process as a means to perform a self-audit with the goal to improve its MS4 Programs.	<ul style="list-style-type: none"> AMAFCA will document progress made, if any, related to the Annual Report and SWMP revision process as a means to perform a self-audit on the MS4 Program elements. 	No Permit required schedule. Ongoing requirement of the MS4 Permit.	<u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
	144	Part III - Monitoring, Assessment and Reporting Requirements				
	145	TABLE 10: Wet Weather Monitoring Program - Part III.A.1				
See NOI Sections Below	146	<p>According to the requirements in <u>Part III.A.1</u>, The permittee must develop, in consultation with NMED and EPA (and affected Tribes if monitoring locations would be located on Tribal lands), and implement a comprehensive monitoring and assessment program. The permittees shall conduct wet weather monitoring to gather information on the response of receiving waters to wet weather discharges from the MS4 during both wet season (July 1 through October 31) and dry season (November 1 through June 30).</p> <p>Wet Weather Monitoring shall be conducted at outfalls, internal sampling stations, and/or in-stream monitoring locations at each water of the US that runs in each entity or entities' jurisdiction(s).</p>	<p><u>Part III.A.1</u> - Wet weather screening is synonymous with compliance monitoring. In the MRG MS4 Permit area, stormwater runoff discharges to the Rio Grande at outfall locations via major drainage channels, storm drains, and pump stations. The Rio Grande, the only perennial river in the watershed, enters the MRG Watershed in one location (North of Albuquerque) and leaves the MRG Watershed south of Albuquerque. Details for this program are provided in the SWMP sections below.</p>	<p>The program details and measurable goals are described below. The Final Sampling Plan for Cooperative Compliance Monitoring (CMC) was submitted to EPA on May 5, 2016. The sampling plan was accepted by the EPA and NMED.</p> <p>The current 2014 Middle Rio Grande Watershed Based Municipal Separate Storm Sewer System (MS4) Permit, NPDES Permit No. NMR04A000, expired on December 19, 2019. The MRG Watershed Based MS4 Permit entered into administrative continuance in Dec. 2019 when EPA Region 6 did not issue a new MS4 Permit before the current MS4 Permit expirations date. The MRG TAG sent EPA an Administrative Continuance letter dated October 15, 2019. Until a new MS4 Permit is issued, there are no wet and dry weather monitoring requirements in the Rio Grande. However, during administrative continuance, the CMC members will evaluate and may choose to continue sampling to support their MS4 program needs, demonstrate program progress, or gather additional data in support of the future Permit compliance.</p>	See specific Permit activity schedules below.	See specific Permit activity below.

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
IV	147	<p><u>Part III.A.3.1.b. Option B:</u> Cooperative Monitoring Program</p> <p>Develop a cooperative wet weather monitoring program with other permittees in the Middle Rio Grande Watershed. The program will monitor waters coming into the watershed (upstream) and leaving the watershed (downstream). The program must include sampling for TSS, TDS, COD, BOD5, DO, oil and grease, E. coli, pH, total kjeldahl nitrogen, nitrate plus nitrite, dissolved phosphorus, total ammonia plus organic nitrogen, total phosphorus, PCBs and Gross alpha. Monitoring of temperature shall be also conducted at outfalls and/or Rio Grande monitoring locations. Permittees must include additional parameters from monitoring conducted under permits NMS000101, NMR04A000 or/and NMR040001 whose mean values are at or above a WQS. The monitoring program must sample the pollutants for a minimum of 7 storm events per location during the permit term with at least 3 events in the wet season and 2 events in the dry season.</p>	<p>Part III.A.3.1.b. Option B: Cooperative Monitoring Program -The cooperative wet weather compliance monitoring will monitor waters coming into the watershed (upstream) and leaving the watershed (downstream) for a minimum of 7 storm events per location during the Permit term with at least 3 in the events in the wet season and 2 events in the dry season. The wet season is defined in the permit as July 1 through October 31 and the dry season as November 1 through June 30.</p> <p>AMAFCA joined the Compliance Monitoring Cooperative (CMC) group, which includes 12 watershed partners. The participatory permittees have developed a cooperative wet weather compliance monitoring program to assess the effect of stormwater discharges on the receiving water, the Middle Rio Grande. This monitoring plan was reviewed and discussed with NMED and EPA during its development. The cooperative sampling plan was accepted by EPA and permittees submitted the sampling plan on May 5, 2016 and sampling certification to EPA on June 28, 2016. At the end of FY 2019, all Permit required samples have been obtained by the CMC.</p>	<ul style="list-style-type: none"> If the CMC does continue wet weather compliance monitoring during administrative continuance of this Permit, the monitoring program will follow the Permit requirements for parameters tested (TSS, TDS, COD, BOD5, DO, oil and grease, E. coli, pH, total kjeldahl nitrogen, nitrate plus nitrite, dissolved phosphorus, total ammonia plus organic nitrogen, total phosphorus, PCBs, Gross alpha, and temperature). In addition, parameters from stormwater monitoring conducted under Permit NMS000101, whose mean values were at or above a WQS, will also be tested. The complete list of parameters is listed in the CMC sampling plan. In addition, DO, pH, conductivity, and temperature will be analyzed in the field within 15 minutes of sample collection. If the CMC does continue wet weather compliance monitoring during administrative continuance of this Permit, the parameter list may be modified based on a review of the results obtained within the watershed and the program assessment needs for the permittees. AMAFCA will document, as applicable, any wet weather monitoring activity. AMAFCA will incorporate documentation by reference into the Annual Report and plans to document progress on the AMAFCA website. If the CMC does continue wet weather compliance monitoring during administrative continuance of this Permit, the monitoring program will be conducted according to the approved Sampling Plan for Compliance Monitoring. 	<p>Monitoring program will sample the pollutants for a minimum of 7 storm events per location during the permit term with at least 3 events in the wet season and 2 events in the dry season.</p> <p>This Permit activity is complete</p>	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern</p>
IV	148	<p>As required in <u>Part III.A.1.e.</u> and <u>Table 10</u>, the permittees shall submit wet weather monitoring preference Option A or Option B to EPA (i.e., individual monitoring program vs. cooperative monitoring program) with NOI submittals.</p>	<p><u>Part III.A.1.e, Table 10</u> - AMAFCA submitted its NOI in compliance with the permit requirements and schedule. AMAFCA will participate in Option B - cooperative monitoring program.</p>	<ul style="list-style-type: none"> This Permit activity is complete. 	<p>N/A - Permit activity is complete</p>	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p>
Not Included in NOI	149	<p><u>Part III.A.1.e, Table 10</u> - Submit a detailed description of the monitoring scheme to EPA and NMED for approval. The monitoring scheme should include: a list of pollutants; a description of monitoring sites with an explanation of why those sites were selected; and a detailed map of all proposed monitoring sites. In addition, as required in Part III.A.1.h, the monitoring program must include a contingency plan for collecting additional monitoring data within the MS4 or at additional appropriate instream locations should monitoring results indicate that MS4 discharges may be contributing to instream exceedances of WQS. The purpose of this additional monitoring effort would be to identify sources of elevated pollutant loadings so they could be addressed by the SWMP.</p>	<p>Part III.A.1.e, Table 10 - AMAFCA joined the Compliance Monitoring Cooperative (CMC) group, which includes 12 watershed partners. The participatory permittees have developed a wet weather cooperative monitoring program to assess the effect of stormwater discharges on the receiving water, the Middle Rio Grande. This monitoring plan was reviewed and discussed with NMED and EPA during its development. Multiple drafts were submitted to EPA and NMED by the CMC, including drafts on Sept. 16, 2015 and Dec. 21, 2015. The cooperative monitoring plan was accepted by EPA and permittees submitted the sampling plan on May 5, 2016 and sampling certification to EPA on June 28, 2016. Modifications to this sampling may be submitted to the EPA in the future, as needed for approval.</p>	<ul style="list-style-type: none"> This Permit activity is complete. The CMC members have met all requirements for wet weather compliance monitoring. If the CMC does continue wet weather monitoring during administrative continuance of this Permit, the monitoring program will be conducted according to the EPA/NMED approved monitoring plan. 	<p>1 year (cooperative) from effective date of MS4 Permit Dec. 22, 2015</p>	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer <u>Program Implementation:</u> Engineering Intern</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
Not Included in NOI	150	<u>Part III.A.1.e, Table 10</u> - Submit certification that all wet weather monitoring sites are operational and begin sampling.	<u>Part III.A.1.e, Table 10</u> - AMAFCA submitted its sampling certification to EPA on June 28, 2016.	<ul style="list-style-type: none"> This Permit activity is complete. AMAFCA, with its cooperative partners, has submitted certifications to the EPA that all wet weather compliance monitoring sites are operational and the CMC has begun sampling, according to the Permit requirements. 	14 months (cooperative) from effective date of MS4 Permit February 22, 2016	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Engineering Intern
Not Included in NOI	151	<p>As required in <u>Part III.A.1.e</u>, update SWMP document and submit Annual Reports. The results of the Wet Weather Monitoring must be provided in each Annual Report.</p> <p>As required in <u>Part III.D.1</u> -Monitoring results obtained during the reporting period running from July 1st to June 30th shall be submitted on discharge monitoring report (DMR) forms along with the Annual Report required by Part III.B. A separate DMR form is required for each monitoring period (season) specified in Part III.A.I. If any individual analytical test result is less than the minimum quantification level (MQL) listed for that parameter, then a value of zero (0) may be used for that test result for the DMR calculations and reporting requirements. The Annual Report shall include the actual value obtained, if test result is less than the MQL.</p>	<p><u>Part II.A.1.e, Table 10</u> - AMAFCA's Stormwater Quality Engineer will review the program requirement for the above-mentioned program elements, during the Annual Report process. A strategy to implement any new program requirements or improve compliance with the program requirements will be developed as needed.</p> <p><u>Part III.D.1</u> - The wet weather compliance monitoring results obtained by the CMC from July 1st to June 30th will be submitted as required by the EPA using the netDMR online website or as otherwise approved by EPA as part of the cooperative sampling program. EPA has required that the NetDMR online system be used to submit DMR results. Since this Permit will be in administrative continuance, and all required compliance monitoring results have been obtained, AMAFCA anticipates additional coordination with EPA relative to future samples uploaded to the netDMR system.</p> <p>AMAFCA will continue internal watershed stormwater quality monitoring, which typically collects samples from various locations. Collection of these samples are weather and equipment dependent. Monitoring results obtained from AMAFCA's internal stormwater quality assessment monitoring program and any continued CMC stormwater quality monitoring are available upon request.</p>	<ul style="list-style-type: none"> As part of the Annual Report process each year, the Stormwater Quality Engineer will review the program requirements listed in Part III.A.1, for the above-mentioned SWMP elements, and assess the overall success of the program. AMAFCA will document the program effectiveness and program success. AMAFCA will incorporate documentation by reference into the Annual Report. The CMC members have met all requirements for wet weather compliance monitoring. If the CMC does continue wet weather monitoring during administrative continuance of this Permit, the wet weather compliance monitoring results obtained from July 1st to June 30th will be submitted as required by the EPA using the netDMR online website or as otherwise approved by EPA as part of the cooperative sampling program. Since this Permit is in administrative continuance, and all required compliance monitoring results have been obtained, AMAFCA anticipates additional coordination with EPA relative to future samples uploaded to the netDMR system. Monitoring results obtained from AMAFCA's internal stormwater quality assessment monitoring program and any continued CMC stormwater quality monitoring are available upon request. 	Update as necessary for SWMP.	<u>Program Lead</u> : AMAFCA's Stormwater Quality Engineer <u>Program Implementation</u> : Engineering Intern

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
	152	Dry Weather Discharge Screening of MS4 - Part III.A.2				
Not Included in NOI	153	According to the requirements in <u>Part III.A.2</u> , Each permittee shall identify, investigate, and address areas within its jurisdiction that may be contributing excessive levels of pollutants to the Municipal Separate Storm Sewer System as a result of dry weather discharges (i.e., discharges from separate storm sewers that occur without the direct influence of runoff from storm events, e.g. illicit discharges, allowable non-stormwater, groundwater infiltration, etc.). Due to the arid and semi-arid conditions of the area, the dry weather discharges screening program may be carried out during both wet season (July 1 through October 31) and dry season (November 1 through June 30). Results of the assessment shall be provided in each Annual Report.	<u>Part III.A.2</u> - The program details and measurable goals are described below, in the Pollution Prevention/Good Housekeeping Control Measure, and in the Illicit Discharge and Improper Disposal Control Measure. There are no perennial streams in the Albuquerque area that contribute to the Rio Grande. As such, the dry weather screening program serves a dual purpose as an illicit discharge screening analysis.	<ul style="list-style-type: none"> The program details and measurable goals are described below, in the Pollution Prevention/Good Housekeeping Control Measure, and in the Illicit Discharge and Improper Disposal Control Measure. 	See specific Permit activity schedules below.	See specific Permit activity below.
Not Included in NOI	154	<p><u>Part III.A.2</u> -This program may be coordinated with the illicit discharge detection and elimination program required in Part I.D.5.e. The dry weather screening program shall be described in the SWMP and comply with the schedules contained in Part I.D.5.e.(iii). The permittee shall:</p> <p>a) Include sufficient screening points to adequately assess pollutant levels from all areas of the MS4.</p> <p>b) Screen for, at a minimum, BOD5, sediment or a parameter addressing sediment (e.g., TSS or turbidity), E. coli, Oil and Grease, nutrients, any pollutant that has been identified as cause of impairment of a waterbody receiving discharges from that portion of the MS4, including temperature.</p> <p>c) Specify the sampling and non-sampling techniques to be issued for initial screening and follow-up purposes.</p> <p>d) Perform monitoring only when an antecedent dry period of at least 72 hours after a rain event greater than 0.1 inch in magnitude is satisfied. Monitoring methodology shall consist of collecting a minimum of 4 grab samples spaced at a minimum interval of 15 minutes each.</p>	<p><u>Part III.A.2</u> - AMAFCA will continue with the existing, cooperative Dry Weather Screening program in place under MS4 Permit NMS000101. The existing Dry Weather Screening program cooperative program with COA includes screening various locations, which screen 100% of COA/AMAFCA jurisdiction and targets industrial areas. Should any discharge be present in a quantity sufficient for analysis, it will be screened for BOD5, sediment (e.g., TSS or turbidity), E. coli, oil and grease, and nutrients. Any discharge collected will be a grab sample according to the Permit monitoring methodology.</p> <p>In addition, AMAFCA has in place a well-defined and implemented routine inspection and O&M program that includes both formal and informal inspections and maintenance schedules for its watershed protection elements. Also, as part of AMAFCA's Levellogger monitoring, AMAFCA screens all major channel inlets to the NDC on AMAFCA ROW monthly. These inspections all function as dry weather inspections.</p> <p>AMAFCA will continue membership and involvement in the cooperative MS4 Technical Advisory Group (MS4 TAG), which will facilitate cooperation and coordination with other MS4s in the Middle Rio Grande related to screening for illicit discharges.</p>	<ul style="list-style-type: none"> Under MS4 Permit NMR04A000, COA has taken the lead on this program and is responsible for the dry weather screening and documentation for this existing program. Screening results collected by the COA can be provided upon request. AMAFCA will continue to perform inspections according to the applicable O&M Manuals and Plans. These inspections also function as dry weather inspections. As part of AMAFCA's Levellogger monitoring, AMAFCA will continue to inspect all channelized inlets to the NDC on AMAFCA ROW monthly. In addition, AMAFCA will incorporate dry weather inspections into projects, as applicable, to increase the documentation of facility inspections. AMAFCA will continue membership and involvement in the cooperative MS4 Technical Advisory Group (MS4 TAG) which will facilitate cooperation and coordination with other MS4s in the Middle Rio Grande related to screening for illicit discharges. 	<p>Cooperative Program -as required in part I.D.5.e.(iii)</p> <p>-Years 1 -3: develop procedures as required in Part I.D.5.e.(i).(c).</p> <p>-Year 4: screen 30% of the MS4 area.</p> <p>-Year 5: screen 70% of the MS4 area.</p>	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation:</u> Engineering Intern, AMAFCA Maintenance Crew, Field Engineer, Maintenance Superintendent</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

NOI Section	ID	Permit Activity Description	Proposed Plan SWMP Rev. 6 - July 1, 2021	Measurable Goal SWMP Rev. 6 - July 1, 2021	Permit Required Implementation Schedule	Responsible Personnel
	155	Floatables Monitoring - Part III.A.3				
Not Included in NOI	156	<p>According to the requirements in <u>Part III.A.3</u>, The permittees shall establish locations for monitoring/assessing floatable material in discharges to and/or from their MS4. A cooperative monitoring program may be established in partnership with other MS4s to monitor and assess floatable material in discharges to and/or from a joint jurisdictional area or watershed basis.</p> <p>Floatable material shall be monitored at least twice per year at priority locations and at minimum of two (2) stations. The amount of collected material shall be estimated in cubic yards.</p> <p>a) One (1) station should be located in the North Diversion (only applicable to COA and AMAFCA).</p>	<p><u>Part III.A.3</u> - AMAFCA will continue to monitor floatable material and the amount collected in participation with other MS4s. AMAFCA will monitor floatable material in the settling area of the NDC and at the I-25/SDC Baffle Chute Stormwater Quality Facility. Note the NDC settling area is within the AMAFCA easement on Sandia Pueblo property, but that is where AMAFCA has monitored floatables for many years. The requirements in this Permit section will be completed in conjunction with the requirements in TABLE 7: Control of Floatables Discharges - Part I.D.5.f. AMAFCA monitors and tracks collection of floatables at all AMAFCA facilities.</p>	<ul style="list-style-type: none"> • AMAFCA will continue to monitor floatable material and estimate the amount collected at least twice per year at a minimum of 2 stations. • AMAFCA will maintain its 5 drying stations, locations where floatable material, sediment and debris is hauled, separated, and properly disposed of. These stations help AMAFCA meet the requirements for this activity. 	Update as necessary for SWMP.	<p><u>Program Lead:</u> AMAFCA's Stormwater Quality Engineer</p> <p><u>Program Implementation:</u> Engineering Intern, AMAFCA Maintenance Crew, Field Engineer, Maintenance Superintendent, GIS Manager</p>

NPDES Permit No. NMR04A000
AMAFCA SWMP

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	157	Industrial and High Risk Runoff Monitoring - Part III.A.4				
4	158	The permittees shall monitor stormwater discharges from Type 1 and 2 industrial facilities which discharge to the MS4 provided such facilities are located in their jurisdiction. (Note: if no such facilities are in the permittee's jurisdiction, the permittee must certify that this program element does not apply).	Activity removed from AMAFCA's SWMP (Rev. 0, December 1, 2015). AMAFCA certifies with submittal of this SWMP that no such industrial activities are located in AMAFCA's jurisdiction and this program element does not apply. This was submitted to EPA in AMAFCA's NOI and accepted.	N/A	N/A	N/A

APPENDICES

**APPENDIX A –
NPDES MIDDLE RIO GRANDE WATERSHED BASED
MS4 PERMIT NMR04A000**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

**Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202 - 2733**

APR 09 2015

CERTIFIED MAIL: RETURN RECEIPT REQUESTED (See Attachment 1)

Addressees: Middle Rio Grande Watershed Municipal Separate Storm Sewer Systems
Operators
(See Attachment 1)

Re: NPDES Permit No. NMR04A000
Notice of Minor Permit Modification

Dear (See Attachment 1):

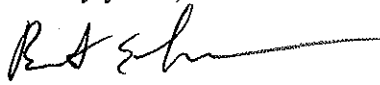
Following regulations listed at 40 CFR 122.63(a) and CFR 122.63 (c), the following minor permit modifications are made to the NPDES Permit No. NMR04A000:

- To allow more time to review and approve NOIs, and remove schedule conflicts, certain interim compliance dates in the compliance schedules included in Activity Tables 1.a through 10, except Table 1.c entitled "Measurable Goals of Anoxic and Hypoxia Levels Measured by Permit Year" have been extended. The corrected pages are enclosed in Attachment 2. The new compliance schedules dates are in bold and underlined text.
- The point of contact and address for the Pueblo of Isleta in Part III, Part IV, and Appendix C has been updated. The updated page(s) are enclosed in Attachment 3.

The version of the permit on the EPA R6 website is also being updated. See <http://epa.gov/region6/water/npdes/sw/ms4/index.htm>

If you have any questions on any aspect of these minor permit modifications, please feel free to contact the permit writer, Nelly Smith, by telephone at:214-665-7109 or via E-mail at Nelly.smith@epa.gov.

Sincerely yours,


for Stacey B. Dwyer, P.E.
Associate Director
NPDES Permits & TMDLs Branch

Enclosures

cc w/Enclosure: New Mexico Environment Department

Attachment 1

Attachment 1

MS4	Address	City	State	Zip Code	Contact Name	Return Receipt Requested
City of Albuquerque	Dept. Municipal Development P.O. Box 1293	Albuquerque	NM	87103	Kevin Daggett	7014015000002452 6650
AMAFCA	2600 Prospect Ave NE	Albuquerque	NM	87107	Jerry Lovato	7014015000002452 6643
NMDOT District 3	7500 Pan American Blvd	Albuquerque	NM	87199	Timothy R, Trujillo	7014015000002452 6636
University of New Mexico	1801 Tucker St NE	Albuquerque	NM	87131	Chemanji (Che) Shu-Nyamboli	7014015000002452 6629
SSCAFCA	1041 Commercial Dr SE	Rio Rancho	NM	87124	Chuck Thomas	7014015000002452 6612
Town of Bernalillo	829 Camino del Pueblo	Bernalillo	NM	87004	Maria Rinaldi	7014015000002452 6605
Sandoval County	2708 Iris NE	Rio Rancho	NM	87144	Fred Marquez	7014015000002452 6599
Village of Corrales	4324 Corrales Rd	Corrales	NM	87048	Mayor Jack Torres	7014015000002452 6582
Los Ranchos de Albuquerque	6718 Rio Grande Blvd NW	Los Ranchos de Albuquerque	NM	87107	Tim McDonough	7014015000002452 6575
City of Rio Rancho	3200 Civic Center Circle NE Ste 200	Rio Rancho	NM	87144	Xavier Pettes	7014015000002452 6568
Bernalillo County	2400 Broadway SE, Bldg N	Albuquerque	NM	87102	Anita Stead	7014015000002452 6551

Attachment 1

Kirtland AFB	377 ABW/CC 200 Wyoming Blvd SE	Kirtland AFB	NM	87117	Chris Segura	7014015000002452 6544
EXPO	P.O. Box 8456	Albuquerque	NM	87198	John C. Jaramillo	7014015000002452 6537
Sandia Laboratories, DOE	P.O. Box 5400, KAFB	Albuquerque	NM		Karen Agogino	7014015000002452 6520
ESCAFCA	829 Camino del Pueblo, Bernalillo, NM	Bernalillo	NM		Jack Torres	7014015000002452 6513
						7014015000002452 6506
Pueblo of Sandia	481 Sandia Loop	Bernalillo	NM	87004	Scott Bulgrin	7014015000002452 6490
Pueblo of Isleta	PO Box 1270	Isleta	NM	87022	Ramona Montoya	7014015000002453 0657

Attachment 2

schedules described in Table 1.a of Part I.C.2.(iii). The annual report must include information on compliance with this section, including results of any sampling conducted by the permittee.

Note: Probable pollutant sources identified by permittees should be submitted to NMED on the following form: <ftp://ftp.nmenv.state.nm.us/www/swqb/Surveys/PublicProbableSourceIDSurvey.pdf>

- (c) **Impairment for Nutrients:** Where the impairment is for nutrients (e.g., nitrogen or phosphorus), the permittee shall identify potential significant sources and develop and implement targeted BMPs to control nutrients from potential sources. The permittee must, at minimum comply with the activities and schedules described in Table 1.b of Part I.C.2, (iii). The annual report must include information on compliance with this section, including results of any sampling conducted by the permittee.
- (d) **Impairment for Dissolved Oxygen:** See Endangered Species Act (ESA) Requirements in Part I.C.3. These program elements may be coordinated with the monitoring required in Part III.A.
- (iii) **Program Development and Implementation Schedules:** Where the impairment is for nutrient constituent (e.g., nitrogen or phosphorus) or bacteria, the permittee must at minimum comply with the activities and schedules in Table 1.a and Table 1.b.

Table 1.a. Pre-TMDL Bacteria Program Development and Implementation Schedules

Activity	Class Permittee				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
Identify potential significant sources of the pollutant of concern entering your MS4	<u>Ten (10)</u> months from effective date of permit	<u>Ten (10)</u> months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Sixteen (16) months from effective date of permit
Develop (or modify an existing program ***) and implement a public education program to reduce the discharge of bacteria in municipal storm water contributed by (if applicable) by pets, recreational and exhibition livestock, and zoos.	<u>Twelve (12)</u> months from effective date of permit	<u>Twelve (12)</u> months from effective date of permit	<u>Fourteen (14)</u> months from effective date of permit	<u>Fourteen (14)</u> months from effective date of permit	Sixteen (16) months from effective date of permit
Develop (or modify an existing program ***) and implement a program to reduce the discharge of bacteria in municipal storm water contributed by areas within your MS4 served by on-site wastewater treatment systems.	<u>Fourteen (14)</u> months from effective date of permit	<u>Fourteen (14)</u> months from effective date of permit	Sixteen (16) months from effective date of permit	Sixteen (16) months from effective date of permit	Eighteen (18) months from effective date of permit
Review results to date from the Illicit Discharge Detection and Elimination program (see Part I.D.5.e) and modify as necessary to prioritize the detection and elimination of discharges contributing bacteria to the MS4	<u>Fourteen (14)</u> months from effective date of permit	<u>Fourteen (14)</u> months from effective date of permit	Sixteen (16) months from effective date of permit	Sixteen (16) months from effective date of permit	Eighteen (18) months from effective date of permit

Develop (or modify an existing program ***) and implement a program to reduce the discharge of bacteria in municipal storm water contributed by other significant source identified in the Illicit Discharge Detection and Elimination program (see Part I.D.5.e)	Sixteen (16) months from effective date of permit	Sixteen (16) months from effective date of permit	Eighteen (18) months from effective date of permit	Eighteen (18) months from effective date of permit	Twenty (20) months from effective date of permit
Include in the Annual Reports progress on program implementation and reducing the bacteria and updates their measurable goals as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs

(**) or MS4s designated by the Director

(***) Permittees previously covered under permit NMS000101 or NMR040000

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

Table 1.b. Pre-TMDL Nutrient Program Development and Implementation Schedules

Activity	Class Permittee				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
Identify potential significant sources of the pollutant of concern entering your MS4	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Sixteen (16) months from effective date of permit
Develop (or modify an existing program ***) and implement a public education program to reduce the discharge of pollutant of concern in municipal storm water contributed by residential and commercial use of fertilizer	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Sixteen (16) months from effective date of permit
Develop (or modify an existing program ***) and implement a program to reduce the discharge of the pollutant of concern in municipal storm water contributed by fertilizer use at municipal operations (e.g., parks, roadways, municipal facilities)	One (1) year from effective date of permit	One (1) year from effective date of permit	Sixteen (16) months from effective date of permit	Sixteen (16) months from effective date of permit	Eighteen (18) months from effective date of permit

Develop (or modify an existing program ***) and implement a program to reduce the discharge of the pollutant of concern in municipal storm water contributed by municipal and private golf courses within your jurisdiction	One (1) <u>year</u> from effective date of permit	One (1) <u>year</u> from effective date of permit	Sixteen (16) months from effective date of permit	Sixteen (16) months from effective date of permit	Eighteen (18) months from effective date of permit
Develop (or modify an existing program ***) and implement a program to reduce the discharge of the pollutant of concern in municipal storm water contributed by other significant source identified in the Illicit Discharge Detection and Elimination program (see Part I.D.5.e)	One (1) <u>year</u> from effective date of permit	One (1) <u>year</u> from effective date of permit	Sixteen (16) months from effective date of permit	Sixteen (16) months from effective date of permit	Eighteen (18) months from effective date of permit
Include in the Annual Reports progress on program implementation and reducing the nutrient pollutant of concern and updates their measurable goals	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs

(**) or MS4s designated by the Director

(***) Permittees previously covered under permit NMS000101 or NMR040000

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

These program elements may be coordinated with the monitoring required in Part III.A.

3. **Endangered Species Act (ESA) Requirements.** Consistent with U.S. FWS Biological Opinion dated August 21, 2014 to ensure actions required by this permit are not likely to jeopardize the continued existence of any currently listed as endangered or threatened species or adversely affect its critical habitat, permittees shall meet the following requirements and include them in the SWMP:

- a. **Dissolved Oxygen Strategy in the Receiving Waters of the Rio Grande:**

- (i) The permittees must identify (or continue identifying if previously covered under permit NMS000101) structural controls, natural or man-made topographical and geographical formations, MS4 operations, or oxygen demanding pollutants contributing to reduced dissolved oxygen in the receiving waters of the Rio Grande. The permittees shall implement controls, and update/revise as necessary, to eliminate discharge of pollutants at levels that cause or contribute to exceedances of applicable water quality standards for dissolved oxygen in waters of the Rio Grande. The permittees shall submit a summary of findings and a summary of activities undertaken under Part I.C.3.a.(i) with each Annual Report. The SWMP submitted with the first and fourth annual reports must include a detailed description of controls implemented (or/and proposed control to be implemented) along with corresponding measurable goals. (Applicable to all permittees).
- (ii) As required in Part I.C.1.d, the COA and AMAFCA shall revise the May 1, 2012 Strategy for dissolved oxygen to address dissolved oxygen at the North Diversion Channel Embayment and/or other MS4 locations. The permittees shall submit the revised strategy to FWS and EPA for approval within a year of permit issuance and progress reports with the subsequent Annual Reports (see also Part I.C.1.d.(iv)). The permittees shall ensure that actions to reduce pollutants or remedial activities selected for the North Diversion Channel Embayment and its watershed are implemented such that there is a reduction in

Table 2. Construction Site Stormwater Runoff Control - Program Development and Implementation Schedules

Activity	Permittee Class				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
Development of an ordinance or other regulatory mechanism as required in Part I.D.5.a.(ii)(a)	<u>Ten (10)</u> months from effective date of permit	<u>Ten (10)</u> months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Eighteen (18) months from effective date of the permit
Develop requirements and procedures as required in Part I.D.5.a.(ii)(b) through in Part I.D.5.a.(ii)(h)	<u>Ten (10)</u> months from effective date of permit	<u>Thirteen (13)</u> months from effective date of permit	<u>Sixteen (16)</u> months from effective date of permit	<u>Sixteen (16)</u> months from effective date of permit	Eighteen (18) months from effective date of permit
Annually conduct site inspections of 100 percent of all construction projects cumulatively disturbing one (1) or more acres as required in Part I.D.5.a.(iii)	<u>Ten (10)</u> months from effective date of permit	Start <u>Thirteen (13)</u> months from effective date of permit and annually thereafter	Start <u>Sixteen (16)</u> months from effective date of permit and annually thereafter	Start eighteen (18) months from effective date of permit and thereafter	Start two (2) years from effective date of permit and thereafter
Coordinate with all departments and boards with jurisdiction over the planning, review, permitting, or approval of public and private construction projects/activities within the permit area as required in Part I.D.5.a.(iv)	<u>Ten (10)</u> months from effective date of permit	<u>Ten (10)</u> months from effective date of permit	<u>Twelve (12)</u> months from effective date of permit	<u>Twelve (12)</u> months from effective date of permit	<u>Fourteen (14)</u> months from effective date of permit
Evaluation of GI/LID/Sustainable practices in site plan reviews as required in Part I.D.5.a.(v)	<u>Ten (10)</u> months from effective date of permit	<u>Ten (10)</u> months from effective date of permit	<u>Twelve (12)</u> months from effective date of permit	<u>Twelve (12)</u> months from effective date of permit	<u>Fourteen (14)</u> months from effective date of permit
Update the SWMP document and annual report as required in Part I.D.5.a.(vi) and in Part I.D.5.a.(vii)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary
Enhance the program to include program elements in Part I.D.5.a.(viii) through Part I.D.5.a.(x)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(xiii) The permittee may incorporate the following elements in the Post-Construction Stormwater Management in New Development and Redevelopment program required in Part I.D.5.b.(ii)(b):

- (a) Provide requirements and standards to direct growth to identified areas to protect environmentally and ecologically sensitive areas such as floodplains and/or other areas with endangered species and historic properties concerns;
- (b) Include requirements to maintain and/or increase open space/buffers along sensitive water bodies, minimize impervious surfaces, and minimize disturbance of soils and vegetation; and
- (c) Encourage infill development in higher density urban areas, and areas with existing storm sewer infrastructure.

Table 3. Post-Construction Stormwater Management in New Development and Redevelopment - Program Development and Implementation Schedules

Activity	Permittee Class				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
Development of strategies as required in Part I.D.5.b.(ii).(a)	<u>Ten (10)</u> months from effective date of permit	<u>Ten (10)</u> months from effective date of permit	<u>Twelve (12)</u> months from effective date of permit	<u>Twelve (12)</u> months from effective date of permit	<u>Fourteen (14)</u> months from effective date of permit
Development of an ordinance or other regulatory mechanism as required in Part I.D.5.b.(ii).(b)	<u>Twenty (24)</u> months from effective date of permit	<u>Thirty (30)</u> months from effective date of permit	<u>Thirty six (36)</u> months from effective date of permit	<u>Thirty six (36)</u> months from effective date of permit	<u>Thirty six (36)</u> months from effective date of permit
Implementation and enforcement, via the ordinance or other regulatory mechanism, of site design standards as required in Part I.D.5.b.(ii).(b)	Within <u>thirty six (36)</u> months from effective date of the permit	Within <u>forty two (42)</u> months from the effective date of the permit	Within <u>forty eight (48)</u> months from effective date of the permit	Within <u>forty eight (48)</u> months from effective date of the permit	Within <u>forty eight (48)</u> months from effective date of the permit
Ensure appropriate implementation of structural controls as required in Part I.D.5.b.(ii).(c) and Part I.D.5.b.(ii).(d)	<u>Ten (10)</u> months from effective date of permit	One (1) year from effective date of permit	Two (2) years from effective date of permit	Two (2) years from effective date of permit	Thirty (30) months from effective date of permit
Develop procedures as required in Part I.D.5.b.(ii).(e), Part I.D.5.b.(ii).(f), Part I.D.5.b.(ii).(g), and Part I.D.5.b.(ii).(h)	<u>Ten (10)</u> months from effective date of permit	<u>Ten (10)</u> months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Eighteen (18) months from effective date of permit

Coordinate internally with all departments and boards with jurisdiction over the planning, review, permitting, or approval of public and private construction projects/activities within the permit area as required in Part I.D.5.b.(iii)	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	Eleven (11) months from effective date of permit	Eleven (11) months from effective date of permit	One (1) year from effective date of permit
As required in Part I.D.5.b.(iv), the permittee must assess all existing codes, ordinances, planning documents and other applicable regulations, for impediments to the use of GI/LID/Sustainable practices	Ten (10) months from effective date of permit	One (1) year from effective date of permit	Eighteen (18) months from effective date of permit	Eighteen (18) months from effective date of permit	Two (2) years from effective date of permit
As required in Part I.D.5.b.(iv), develop and submit a report of the assessment findings on GI/LID/Sustainable practices.	Eleven (11) months from effective date of permit	Eighteen (18) months from effective date of permit	Two (2) years from effective date of permit	Two (2) years from effective date of permit	Twenty seven (27) months from effective date of permit
Estimation of the number of acres of IA and DCIA as required in Part I.D.5.b.(vi)	Ten (10) months from effective date of permit	One (1) year from effective date of permit	Two (2) years from effective date of permit	Two (2) years from effective date of permit	Thirty (30) months from effective date of permit
Inventory and priority ranking as required in section in Part I.D.5.b.(vii)	Within fifteen (15) months from effective date of the permit	Within twenty four (24) months from effective date of the permit	Within thirty six (36) months from effective date of the permit	Within thirty six (36) months from effective date of the permit	Within forty two (42) months from effective date of the permit
Incorporate watershed protection elements as required in Part I.D.5.b.(viii)	Ten (10) months from effective date of permit	One (1) year from effective date of permit	Two (2) years from effective date of permit	Two (2) years from effective date of permit	Thirty (30) months from effective date of permit
Update the SWMP document and annual report as required in Part I.D.5.b.(ix) and Part I.D.5.b.(x).	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary
Enhance the program to include program elements in Part I.D.5.b.(xi) and Part I.D.5.b.(xii)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs.

(**) or MS4s designated by the Director

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

- (iv) The permittee must include in the SWMP a description of the mechanism(s) utilized to comply with each of the elements required in Part I.D.5.c.(i) throughout Part I.D.5.c.(iii) and its corresponding measurable goal.
- (v) The permittee shall assess the overall success of the program, and document the program effectiveness in the annual report.

Table 4. Pollution Prevention/Good Housekeeping for Municipal/Co-permittee Operations - Program Development and Implementation Schedules

Activity	Permittee Class				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
-Develop or update the Pollution Prevention/Good House Keeping program to include the elements in Part I.D.5.c.(i)	Ten (10) months from effective date of the permit	Twelve (12) months from effective date of the permit	Fourteen (14) months from effective date of the permit	Fourteen (14) months from effective date of the permit	Eighteen (18) months from effective date of the permit
-Enhance the program to include the elements in Part I.D.5.c.(ii)	Ten (10) months from effective date of the permit	One (1) year from effective date of the permit	Two (2) years from effective date of the permit	Two (2) years from effective date of the permit	Thirty (30) months from effective date of the permit
-Develop or update a list and a map of industrial facilities owned or operated by the permittee as required in Part I.D.5.c.(iii)	Ten (10) months from effective date of the permit	Eleven (11) months from effective date of the permit	One (1) year from effective date of the permit	One (1) year from effective date of the permit	Eighteen (18) months from effective date of the permit
Update the SWMP document and annual report as required in Part I.D.5.c.(iv) and Part I.D.5.c.(v)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs

(**) or MS4s designated by the Director

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

d. Industrial and High Risk Runoff (Applicable only to Class A permittees)

- (i) The permittee must control through ordinance, permit, contract, order or similar means, the contribution of pollutants to the municipal storm sewer by storm water discharges associated with industrial activity and the quality of storm water discharged from sites of industrial activity as defined in 40 CFR 122.26(b)(14)(i)-(ix) and (xi). If no such industrial activities are in a permittees jurisdiction, that permittee may certify that this program element does not apply.
- (ii) The permittee must continue implementation and enforcement of the Industrial and High Risk Runoff program, assess the overall success of the program, and document both direct and indirect measurements of program effectiveness in the annual report. The program shall include:
 - (a) A description of a program to identify, monitor, and control pollutants in stormwater discharges to the MS4 from municipal landfills; other treatment, storage, or disposal facilities for municipal waste (e.g. transfer stations, incinerators, etc.); hazardous waste treatment, storage, disposal and recovery facilities; facilities that are subject to EPCRA Title III, Section 313; and any other industrial or commercial discharge the permittee(s) determines are contributing a substantial pollutant loading to the

Table 5: Industrial and High Risk Runoff - Program Development and Implementation Schedules:

Activity	Permittee Class	
	A Phase I MS4s	Cooperative (*) Any Permittee with cooperative programs
Ordinance (or other control method) as required in Part I.D.5.d.(i)	Ten (10) months from effective date of the permit	Twelve (12) months from effective date of the permit
Continue implementation and enforcement of the Industrial and High Risk Runoff program, assess the overall success of the program, and document both direct and indirect measurements of program effectiveness in the annual report as required in Part I.D.5.d.(ii)	Ten (10) months from effective date of the permit	Twelve (12) months from effective date of the permit
Meet the monitoring requirements in Part I.D.5.d.(iii)	Ten (10) months from effective date of the permit	Twelve (12) months from effective date of the permit
Include requirements in Part I.D.5.d.(iv)	Ten (10) months from permit effective date of the permit	Twelve (12) months from effective date of the permit
Update the SWMP document and annual report as required in Part I.D.5.d.(v) and Part I.D.5.d.(vi)	Update as necessary	Update as necessary
Enhance the program to include requirements in Part I.D.5.d.(vii)	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs.
Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

e. Illicit Discharges and Improper Disposal

- (i) The permittee shall develop, revise, implement, and enforce a program to detect and eliminate illicit discharges (as defined at 40 CFR 122.26(b)(2)) entering the MS4. **Permittees previously covered under NMS000101 or NMR040000 must continue existing programs while updating those programs, as necessary, to comply with the requirements of this permit.** The permittee must:
 - (a) Develop, if not already completed, a storm sewer system map, showing the names and locations of all outfalls as well as the names and locations of all waters of the United States that receive discharges from those outfalls. Identify all discharge points into major drainage channels draining more than twenty (20) percent of the MS4 area;
 - (b) To the extent allowable under State, Tribal or local law, effectively prohibit, through ordinance or other regulatory mechanism, non-stormwater discharges into the MS4, and implement appropriate enforcement procedures and actions;
 - (c) Develop and implement a plan to detect and address non-stormwater discharges, including illegal dumping, to the MS4. The permittee must include the following elements in the plan:
 - A. Procedures for locating priority areas likely to have illicit discharges including field test for selected pollutant indicators (ammonia, boron, chlorine, color, conductivity, detergents, *E. coli*, enterococci, total coliform, fluoride, hardness, pH, potassium, conductivity, surfactants), and visually screening outfalls during dry weather;

- (d) If participating in a cooperative program with other MS4s, required detection program frequencies may be based on the combined jurisdictional area rather than individual jurisdictional areas and may use assessment areas crossing jurisdictional boundaries to reduce total number of screening locations (e.g., a shared single screening location that would provide information on more than one jurisdiction); and
- (e) After screening a non-high priority area once, adopt an "in response to complaints only" IDDE for that area provided there are citizen complaints on no more than two (2) separate events within a twelve (12) month period.
- (f) Enhance the program to utilize procedures and methodologies consistent with those described in "Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments."

Table 6. Illicit Discharges and Improper Disposal - Program Development and Implementation Schedules

Activity	Permittee Class				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census ***)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
Mapping as required in Part I.D.5.e.(i)(a)	<u>Ten (10)</u> months from effective date of permit	<u>Ten (10)</u> months from effective date of permit	<u>Eleven (11)</u> months from effective date of permit	<u>Eleven (11)</u> months from effective date of permit	<u>Fourteen (14)</u> months from effective date of permit
Ordinance (or other control method) as required in Part I.D.5.e.(i)(b)	<u>Ten (10)</u> months from effective date of permit	<u>Ten (10)</u> months from effective date of permit	Two (2) years from effective date of permit	Two (2) years from effective date of permit	Thirty (30) months from effective date of permit
Develop and implement a IDDE plan as required in Part I.D.5.e.(i)(c)	<u>Ten (10)</u> months from effective date of permit	<u>Ten (10)</u> months from effective date of permit	Two (2) years from effective date of permit	Two (2) years from effective date of permit	Thirty (30) months from effective date of permit
Develop an education program as required in Part I.D.5.e.(i)(d)	<u>Ten (10)</u> months from effective date of permit	<u>Ten (10)</u> months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Eighteen (18) months from effective date of permit
Establish a hotline as required in Part I.D.5.e.(i)(e)	Update as necessary	<u>Ten (10)</u> months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Eighteen (18) months from effective date of permit
Investigate suspected significant/severe illicit discharges as required in Part I.D.5.e.(i)(f)	<u>Ten (10)</u> months from effective date of permit	<u>Ten (10)</u> months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Eighteen (18) months from effective date of permit
Review complaint records and develop a targeted source reduction program as required in Part I.D.5.e.(i)(g)	<u>Ten (10)</u> months from effective date of permit	<u>Ten (10)</u> months from effective date of permit	N/A	N/A	One (1) year from effective date of permit

Screening of system as required in Part I.D.5.e.(iii) as follows:	1 / year	1 / year	1 / year	1 / year	1 / year
a.) High priority areas**					
b.) Whole system	-Screen 20% of the MS4 per year	- Screen 20% of the MS4 per year	-Years 1 – 2: develop procedures as required in Part I.D.5.e.(i)(c) -Year 3: screen 30% of the MS4 -Year 4: screen 20% of the MS4 -Year 5: screen 50% of the MS4	-Years 1 – 2: develop procedures as required Part I.D.5.e.(i)(c) -Year 3: screen 30% of the MS4 -Year 4: screen 20% of the MS4 -Year 5: screen 50% of the MS4	-Years 1 – 3: develop procedures as require in Part I.D.5.e.(i)(c) -Year 4: screen 30% of the MS4 -Year 5: screen 70% of the MS4
Develop, update, and implement a Waste Collection Program as required in Part I.D.5.e.(iv)	Ten (10) months from effective date of permit	Eighteen (18) months from effective date of permit	Two (2) years from effective date of permit	Two (2) years from effective date of permit	Thirty (30) months from effective date of permit
Develop, update and implement a Spill Prevention and Response program to prevent, contain, and respond to spills that may discharge into the MS4 as required in Part I.D.5.e.(v)	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Eighteen (18) months from effective date of permit
Update the SWMP document and annual report as required in Part I.D.5.e.(iii), Part I.D.5.e.(vi), and Part I.D.5.e.(vii).	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary
Enhance the program to include requirements in Part I.D.5.e.(ix)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs.

(**) High priority areas include any area where there is ongoing evidence of illicit discharges or dumping, or where there are citizen complaints on more than five (5) separate events within twelve (12) months

(***) or MS4s designated by the Director

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

f. Control of Floatables Discharges

- (i) The permittee must develop, update, and implement a program to address and control floatables in discharges into the MS4. The floatables control program shall include source controls and, where necessary, structural controls. **Permittees previously covered under NMS000101 or NMR040000 must continue existing programs while updating those programs, as necessary, to comply with the requirements of this permit.** The following elements must be included in the program:

- (a) Develop a schedule for implementation of the program to control floatables in discharges into the MS4 (Note: AMAFCA and the City of Albuquerque should update the schedule according to the findings of the 2005 AMAFCA/COA Floatable and Gross Pollutant Study and other studies); and
- (b) Estimate the annual volume of floatables and trash removed from each control facility and characterize the floatable type.
- (ii) The permittee must include in the SWMP a description of the mechanism(s) utilized to comply with each of the elements required in Part I.D.5.f.(i).
- (iii) The permittee shall assess the overall success of the program, and document the program effectiveness in the annual report.

Table 7. Control of Floatables Discharges - Program Development and Implementation Schedules

Activity	Permittee Class				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
- Develop a schedule to implement the program as required in Part I.D.5.f.(i)(a)	Ten (10) months from the effective date of the permit	Ten (10) months from the effective date of the permit	One (1) year from the effective date of the permit	One (1) year from the effective date of the permit	Eighteen (18) months from the effective date of the permit
-Estimate the annual volume of floatables and trash removed from each control facility and characterize the floatable type as required in Part I.D.5.f.(i)(b)	Ten (10) months from the effective date of the permit	One (1) year from the effective date of the permit	Two (2) years from the effective date of the permit	Two (2) years from the effective date of the permit	Thirty (30) months from the effective date of the permit
Update the SWMP document and annual report as required in Part I.D.5.f.(ii) and Part I.D.5.f.(iii).	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs.

(**) or MS4s designated by the Director

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

g. Public Education and Outreach on Stormwater Impacts

- (i) The permittee shall, individually or cooperatively, develop, revise, implement, and maintain a comprehensive stormwater program to educate the community, employees, businesses, and the general public of hazards associated with the illegal discharges and improper disposal of waste and about the impact that stormwater discharges on local waterways, as well as the steps that the public can take to reduce pollutants in stormwater. **Permittees previously covered under NMS000101 and NMR040000 must continue existing programs while updating those programs, as necessary, to comply with the requirements of this permit.**
- (ii) The permittee must implement a public education program to distribute educational knowledge to the community or conduct equivalent outreach activities about the impacts of storm water discharges on water bodies and the steps that the public can take to reduce pollutants in storm water runoff. The permittee must:

Table 8. Public Education and Outreach on Stormwater Impacts - Program Development and Implementation Schedules

Activity	Permittee Class				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
Develop, revise, implement, and maintain an education and outreach program as required in Part I.D.5.g.(i) and Part I.D.5.g.(ii)	<u>Ten (10)</u> months from the effective date of the permit	<u>Eleven (11)</u> months from the effective date of the permit	<u>Twelve (12)</u> months from effective date of the permit	<u>Twelve (12)</u> months from effective date of the permit	<u>Fourteen (14)</u> months from effective date of the permit
Update the SWMP document and annual report as required in Part I.D.5.g.(iii) and Part I.D.5.g.(iv)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary
Enhance the program to include requirements in Part I.D.5.g.(v) through Part I.D.5.g.(viii)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs.

(**) or MS4s designated by the Director

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

h. Public Involvement and Participation

- (i) The permittee must provide local public notice of and make available for public review a copy of the complete NOI and attachments (see Part I.B.2). Local public notice may be made by newspaper notice, notice at a council meeting, posting on the internet, or other method consistent with state/tribal/local public notice requirements.

The permittee must consider all public comments received during the public notice period and modify the NOI, or include a schedule to modify the SWMP, as necessary, or as required by the Director modify the NOI or/and SWMP in response to such comments. The Permittees must include in the NOI any unresolved public comments and the MS4's response to these comments. Responses provided by the MS4 will be considered as part of EPA's decision-making process. See also Appendix E Providing Comments or Requesting a Public Hearing on an Operator's NOI.

- (ii) The permittee shall develop, revise, implement and maintain a plan to encourage public involvement and provide opportunities for participation in the review, modification and implementation of the SWMP; develop and implement a process by which public comments to the plan are received and reviewed by the person(s) responsible for the SWMP; and, make the SWMP available to the public and to the operator of any MS4 or Tribal authority receiving discharges from the MS4. **Permittee previously covered under NMS000101 or NMR040000 must continue existing public involvement and participation programs while updating those programs, as necessary, to comply with the requirements of this permit.**

system, using phones and social media); Revegetation Programs; Storm Drain Stenciling Programs; Stream cleanup and Monitoring program/events.

Table 9. Public Involvement and Participation - *Program Development and Implementation Schedules*

Activity	Permittee Class				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
Develop (or update), implement, and maintain a public involvement and participation plan as required in Part I.D.5.h.(ii) and Part I.D.5.h.(iii)	<u>Ten (10)</u> months from effective date of the permit	<u>Ten (10)</u> months from effective date of the permit	<u>Eleven (11)</u> months from effective date of the permit	<u>Eleven (11)</u> months from effective date of the permit	One (1) year from effective date of the permit
Comply with State, Tribal, and local notice requirements when implementing a Public Involvement and Participation Program as required in Part I.D.5.h.(iv)	<u>Ten (10)</u> months from effective date of the permit	<u>Eleven (11)</u> months from effective date of the permit	<u>Twelve (12)</u> months from effective date of the permit	<u>Twelve (12)</u> months from effective date of the permit	<u>Fourteen (14)</u> months from effective date of the permit
Include elements as required in Part I.D.5.h.(v)	<u>Ten (10)</u> months from effective date of the permit	<u>Eleven (11)</u> months from effective date of the permit	One (1) year from effective date of the permit	One (1) year from effective date of the permit	Eighteen (18) months from effective date of the permit
Update the SWMP document and annual report as required in Part I.D.5.h.(vi), Part I.D.5.h.(vii), and Part I.D.5.h.(viii)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary
Enhance the program to include requirements in Part I.D.5.h.(ix)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs.

(**) or MS4s designated by the Director

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

6. Stormwater Management Program Review and Modification.

a. Program Review. Permittee shall participate in an annual review of its SWMP in conjunction with preparation of the annual report required in Part III.B. Results of the review shall be discussed in the annual report and shall include an assessment of:

- (i) SWMP implementation, progress in achieving measurable goals, and compliance with program elements and other permit conditions;
- (ii) the effectiveness of its SWMP, and any necessary modifications, in complying with the permit, including requirements to control the discharge of pollutants, and comply with water quality standards and any applicable approved TMDLs; and the adequacy of staff, funding levels, equipment, and support capabilities to fully implement the SWMP and comply with permit conditions.

- h. Response to monitoring results: The monitoring program must include a contingency plan for collecting additional monitoring data within the MS4 or at additional appropriate instream locations should monitoring results indicate that MS4 discharges may be contributing to instream exceedances of WQS. The purpose of this additional monitoring effort would be to identify sources of elevated pollutant loadings so they could be addressed by the SWMP.

Table 10. Wet Weather Monitoring Program Implementation Schedules:

Activity	Permittee Class				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
Submit wet weather monitoring preference to EPA (i.e., individual monitoring program vs. cooperative monitoring program) with NOI submittals	<u>NOI submittal Deadline (see Table 1)</u>	<u>NOI submittal Deadline (see Table 1)</u>	<u>NOI submittal Deadline (see Table 1)</u>	<u>NOI submittal Deadline (see Table 1)</u>	<u>NOI submittal Deadline (see Table 1)</u>
Submit a detailed description of the monitoring scheme to EPA and NMED for approval. The monitoring scheme should include: a list of pollutants; a description of monitoring sites with an explanation of why those sites were selected; and a detailed map of all proposed monitoring sites	<u>Ten (10)</u> months from effective date of permit	<u>Ten (10)</u> months from effective date of permit	<u>Eleven (11)</u> months from effective date of permit	<u>Eleven (11)</u> months from effective date of permit	<u>Twelve (12)</u> months from effective date of permit
Submit certification that all wet weather monitoring sites are operational and begin sampling	<u>Eleven (11)</u> months from effective date of permit	<u>Eleven (11)</u> months from effective date of permit	<u>Thirteen (13)</u> months from effective date of permit	<u>Thirteen (13)</u> months from effective date of permit	<u>Fourteen (14)</u> months from effective date of permit
Update SWMP document and submit annual reports	Annually	Annually	Annually	Annually	Annually

(**) or MS4s designated by the Director

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

2. **Dry Weather Discharge Screening of MS4:** Each permittee shall identify, investigate, and address areas within its jurisdiction that may be contributing excessive levels of pollutants to the Municipal Separate Storm Sewer System as a result of dry weather discharges (i.e., discharges from separate storm sewers that occur without the direct influence of runoff from storm events, e.g. illicit discharges, allowable non-stormwater, groundwater infiltration, etc.). Due to the arid and semi-arid conditions of the area, the dry weather discharges screening program may be carried out during both wet season (July 1 through October 31) and dry Season (November 1 through June 30). Results of the assessment

Attachment 3

Attachment 3

Page 9 of Part III.D

Pueblo of Isleta
Attn: Ramona M. Montoya, Environment Division Manager
PO Box 1270
Isleta NM 87022

Page 6 of Part IV.U

Pueblo of Isleta
Department of Cultural and Historic Preservation
Attn: Daniel Waseta, Director
PO Box 1270
Isleta NM 87022

Appendix C

Tribal Historic Preservation Officers (THPO)
Pueblo of Isleta
Department of Cultural and Historic Preservation
Attn: Dr. Henry Walt, THPO
PO Box 1270
Isleta NM 87022

New Mexico Environment Department
Attn: Bruce Yurdin, Program Manager
Surface Water Quality Bureau
Point Source Regulation Section
P.O. Box 5469
Santa Fe, New Mexico 87502

Pueblo of Sandia Environment Department
Attn: Scott Bulgrin, Water Quality Manager
481 Sandia Loop
Bernalillo, NM 87004

(Note: Only those MS4s with discharges upstream of or to waters under the jurisdiction of the Pueblo of Sandia: AMAFCA, Sandoval County, Village of Corrales, City of Rio Rancho, Town of Bernalillo, SSCAFCA, and ESCAFCA)

Pueblo of Isleta

Attn: Ramona M. Montoya, Environment Division Manager
P.O. Box 1270
Isleta NM 87022

(Notes: Only the City of Albuquerque, Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA), New Mexico Department of Transportation (NMDOT) District 3, KAFB (Kirtland Air Force Base), Sandia Labs (DOE), and Bernalillo County). All parties submitting an NOI or NOT shall notify the Pueblo of Isleta in writing that a NOI or NOT has been submitted to EPA

Water Resources Division Manager
Pueblo of Santa Ana
2 Dove Road

Santa Ana Pueblo, New Mexico 87004

(Note: Only those MS4s with discharges upstream of or to waters under the jurisdiction of the Pueblo of Santa Ana)

Bataan Memorial Building
407 Galisteo Street, Ste. 236
Santa Fe, New Mexico 87501

Pueblo of Sandia Environment Department
Attn: Frank Chaves, Environment Director
481 Sandia Loop
Bernalillo, New Mexico 87004

Pueblo of Isleta
Department of Cultural and Historic Preservation
Attn: Daniel Waseta, Director
P.O. Box 1270
Isleta NM 87022

Water Resources Division Manager
Pueblo of Santa Ana
2 Dove Road
Santa Ana Pueblo, New Mexico 87004

3. If the permittee receives a request for an archeological survey or notice of adverse effects from the SHPO, the permittee shall delay such activity until:
 - a. A cultural resource survey report has been submitted to the SHPO for a review and a determination of no effect or no adverse effect has been made, and
 - b. If an adverse effect is anticipated, measures to minimize harm to historic properties have been agreed upon between the permittee and the SHPO.
 4. If the permittee does not receive notification of adverse effects or a request for an archeological survey from the SHPO within thirty (30) days, the permittee may proceed with the activity.
 5. Alternately, the permittee may obtain authorization for stormwater discharges from such sites of disturbance by applying for a modification of this permit. The permittee may apply for a permit modification by submitting the following information to the Permitting Authority 180 days prior to commencing such discharges:
 - a. A letter requesting a permit modification to include discharges from activities subject to this provision, in accordance with the signatory requirements in Part IV.H.
 - b. A description of the construction or land disturbing activity and the potential impact that this activity may have upon the ground; County in which the facility will be constructed; type of facility to be constructed; size area (in acres) that the facility will encompass; expected date of construction; and whether the facility is located on land owned or controlled by any political subdivision of New Mexico; and
 - c. A copy of a USGS topographic map outlining the location of the project and other ancillary impact areas.
- V. **CONTINUATION OF THE EXPIRED GENERAL PERMIT.** If this permit is not reissued or replaced prior to the expiration date, it will be administratively continued in accordance with the Administrative Procedures Act and remain in force and effect. Any permittee who was granted permit coverage prior to the expiration date will automatically remain covered by the continued permit until the earlier of:

II. State Historic Preservation Officers (SHPO)

SHPO List for areas covered by the permit:

NEW MEXICO

Historic Preservation Div, Office of Cultural Affairs
Bataan Memorial Building, 407 Galisteo Street, Suite 236
Santa Fe, NM 87501
505-827-6320 FAX: 505-827-6338

III. Tribal Historic Preservation Officers (THPO)

In instances where a Tribe does not have a Tribal Historic Preservation Officer, please contact the appropriate Tribal government office when responding to this permit eligibility condition.

Tribal Historic Preservation Officers:

Mescalero Apache Tribe
P.O. Box 227
Mescalero, New Mexico 88340

Pueblo of Sandia Environment Department
Attn: Frank Chaves, Environment Director
481 Sandia Loop
Bernalillo, New Mexico 87004

Pueblo of Isleta
Department of Cultural and Historic Preservation
Attn: Dr. Henry Walt, THPO
P.O. Box 1270
Isleta NM 87022

Water Resources Division Manager
Pueblo of Santa Ana
2 Dove Road
Santa Ana Pueblo, New Mexico 87004

For more information:

National Association of Tribal Historic
Preservation Officers
P.O. Box 19189
Washington, DC 20036-9189
Phone: (202) 628-8476
Fax: (202) 628-2241

IV. Advisory Council on Historic Preservation

Advisory Council on Historic Preservation, 1100 Pennsylvania Avenue, NW., Suite 803,
Washington, DC 20004 Telephone: (202) 606-8503, Fax: (202) 606-8647/8672, E-mail:
achp@achp.gov



Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

NPDES General Permit No. NMR04A000

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et. seq; the "Act"), except as provided in Part I.A.5 of this permit, operators of municipal separate storm sewer systems located in the area specified in Part I.A.1 are authorized to discharge pollutants to waters of the United States in accordance with the conditions and requirements set forth herein.

Only operators of municipal separate storm sewer systems in the general permit area who submit a Notice of Intent and a storm water management program document in accordance with Part I.A.6 of this permit are authorized to discharge storm water under this general permit.

This is a renewal NPDES permit issued for these portions of the small municipal separate storm sewer systems covered under the NPDES permit No NMR040000 and NMR040001 and the large municipal separate storm sewer systems covered under the NPDES permit No NMS000101.

This permit is issued on and shall become effective on the date of publication in the Federal Register. DEC 22 2014


This permit and the authorization to discharge shall expire at, midnight, December 19, 2019.

Signed by

Prepared by



William K. Honker, P.E.
Director
Water Quality Protection Division



Nelly Smith
Environmental Engineer
NPDES Permits and TMDLs Branch

MIDDLE RIO GRANDE WATERSHED BASED MUNICIPAL SEPARATE STORM SEWER SYSTEM PERMIT

Table of Contents

Cover Page	Page
Part I INDIVIDUAL PERMIT CONDITIONS	
A. Discharges Authorized Under This General Permit.....	6 of Part I
1. Permit Area.....	6 of Part I
2. Potentially Eligible MS4s.....	6 of Part I
3. Eligibility.....	6 of Part I
4. Authorized Non-Stormwater Discharges.....	7 of Part I
5. Limitations on Coverage.....	7 of Part I
6. Authorization under This General Permit.....	8 of Part I
a. Obtaining Permit Coverage.....	8 of Part I
b. Terminating Coverage.....	9 of Part I
B. Notice of Intent Requirements.....	9 of Part I
1. Deadlines for Notification.....	9 of Part I
a. Designations.....	9 of Part I
b. New Operators.....	10 of Part I
c. Submitting a Late NOI.....	10 of Part I
d. End of Administrative Continued Coverage under Previous Permit.....	10 of Part I
2. Contents of Notice of Intent.....	11 of Part I
3. Where to Submit.....	12 of Part I
4. Permittees with Cooperative Elements in their SWMP.....	12 of Part I
C. Special Conditions.....	12 of Part I
1. Compliance with Water Quality Standards.....	12 of Part I
2. Discharges to Impaired Waters with and without Approved TMDLs.....	15 of Part I
3. Endangered Species Act (ESA) Requirements.....	20 of Part I
a. Dissolved Oxygen Strategy in the Receiving Waters of the Rio Grande.....	20 of Part I
b. Sediment Pollutant Load Reduction Strategy (Applicable to all permittees).....	22 of Part I
D. Stormwater Management Program (SWMP).....	23 of Part I
1. General Requirements.....	23 of Part I
2. Legal Authority.....	23 of Part I
3. Shared Responsibility and Cooperative Programs.....	24 of Part I
4. Measurable Goals.....	24 of Part I
5. Control Measures.....	25 of Part I
a. Construction Site Stormwater Runoff Control.....	25 of Part I
b. Post-Construction Stormwater Management in New Development and	

Redevelopment.....	28 of Part I
c. Pollution Prevention/Good Housekeeping for Municipal/Permittee Operations..	35 of Part I
d. Industrial and High Risk Runoff.....	37 of Part I
e. Illicit Discharges and Improper Disposal.....	39 of Part I
f. Control of Floatables Discharges.....	43 of Part I
g. Public Education and Outreach on Stormwater Impacts.....	44 of Part I
h. Public Involvement and Participation.....	47 of Part I
6. Stormwater Management Review and Modification.....	49 of Part I
a. Program Review.....	49 of Part I
b. Program Modification.....	50 of Part I
c. Program Modifications Required by EPA.....	50 of Part I
d. Transfer of Ownership, Operational Authority, or Responsibility for SWMP Implementation.....	50 of Part I
7. Retention of Program Records.....	51 of Part I
8. Qualifying State, Tribal or Local Program.....	51 of Part I
 PART II NUMERIC DISCHARGE LIMITATIONS.....	 1 of Part II
Reserved	
 PART III MONITORING, ASSESSMENT, AND REPORTING REQUIREMENTS.....	 1 of Part III
A. Monitoring and Assessment.....	1 of Part III
1. Wet Weather Monitoring.....	1 of Part III
2. Dry Weather Monitoring.....	3 of Part III
3. Floatable Monitoring.....	4 of Part III
4. Industrial and High Risk Runoff Monitoring.....	4 of Part III
5. Additional Sample Type, Collection and Analysis.....	6 of Part III
B. Annual Report.....	7 of Part III
1. SWMP(s) Status of Implementation.....	7 of Part III
2. SWMP Revisions.....	7 of Part III
3. Performance Assessment.....	7 of Part III
4. Annual Expenditures.....	7 of Part III
5. Annual Report Responsibilities for Cooperative Programs.....	7 of Part III
6. Public Review and Comment.....	8 of Part III
7. Signature on Certification of Annual Reports.....	8 of Part III
C. Certification and Signature of Reports.....	8 of Part III
D. Reporting: Where and When to Submit.....	8 of Part III

PART IV	STANDARD PERMIT CONDITIONS.....	1 of Part IV
A.	Duty to Comply.....	1 of Part IV
B.	Penalties for Violations of Permit Conditions.....	1 of Part IV
1.	Criminal Penalties.....	1 of Part IV
2.	Civil Penalties.....	1 of Part IV
3.	Administrative Penalties.....	1 of Part IV
C.	Duty to Reapply.....	2 of Part IV
D.	Need to Halt or Reduce Activity not a Defense.....	2 of Part IV
E.	Duty to Mitigate.....	2 of Part IV
F.	Duty to Provide Information.....	2 of Part IV
G.	Other Information.....	2 of Part IV
H.	Signatory Requirements.....	2 of Part IV
I.	Penalties for Falsification of Monitoring Systems.....	3 of Part IV
J.	Oil and Hazardous Substance Liability.....	3 of Part IV
K.	Property Rights.....	3 of Part IV
L.	Severability.....	3 of Part IV
M.	Requiring a Separate Permit.....	3 of Part IV
N.	State/Environmental Laws.....	3 of Part IV
O.	Proper Operation and Maintenance.....	4 of Part IV
P.	Monitoring and Records.....	4 of Part IV
Q.	Monitoring Methods.....	4 of Part IV
R.	Inspection and Entry.....	4 of Part IV
S.	Permit Actions.....	5 of Part IV
T.	Additional Monitoring by the Permittee(s).....	5 of Part IV
U.	Archaeological and Historic Sites.....	5 of Part IV
V.	Continuation of the Expired General Permit.....	6 of Part IV
W.	Permit Transfers.....	7 of Part IV
X.	Anticipated Noncompliance.....	7 of Part IV
Y.	Procedures for Modification or Revocation.....	7 of Part IV
PART V	PERMIT MODIFICATION.....	1 of Part V
A.	Modification of the Permit.....	1 of Part V
B.	Modification of the SWMP(s).....	1 of Part V
C.	Changes in Representative Monitoring Sites.....	1 of Part V
PART VI	SCHEDULES FOR IMPLEMENTATION AND COMPLIANCE.....	1 of Part VI
A.	Implementation and Augmentation of the SWMP(s).....	1 of Part VI

B. Compliance with Effluent Limitations..... 1 of Part VI

C. Reporting Compliance with Schedules..... 1 of Part VI

D. Modification of the SWMP(s)..... 1 of Part VI

PART VII DEFINITIONS..... 1 of Part VII

PART VIII PERMIT CONDITIONS APPLICABLE TO SPECIFIC AREAS OR INDIAN COUNTY LANDS

Reserved..... 1 of Part VIII

APPENDICES

Appendix A: Middle Rio Grande Watershed Jurisdictions and Potential Permittees

Appendix B: Total Maximum Daily Loads (TMDLs)

Appendix C: Historic Properties Eligibility Procedures

Appendix D: Suggested Initial Phase Sampling Location Concepts – Wet Weather Monitoring

Appendix E: Providing Comments or Requesting a Public Hearing on an MS4 Operator’s NOI

Appendix F: Minimum Quantifications Levels (MQL’s)

Appendix G: Oxygen Saturation and Dissolved Oxygen Concentrations North Diversion Channel Area

PART I. INDIVIDUAL PERMIT CONDITIONS

A. DISCHARGES AUTHORIZED UNDER THIS PERMIT

1. **Permit Area.** This permit is available for MS4 operators within the Middle Rio Grande Sub-Watersheds described in Appendix A. This permit may authorize stormwater discharges to waters of the United States from MS4s within the Middle Rio Grande Watershed provided the MS4:
 - a. Is located fully or partially within the corporate boundary of the City of Albuquerque;
 - b. Is located fully or partially within the Albuquerque urbanized area as determined by the 2000 and 2010 Decennial Census. Maps of Census 2010 urbanized areas are available at:
<http://water.epa.gov/polwaste/npdes/stormwater/Urbanized-Area-Maps-for-NPDES-MS4-Phase-II-Stormwater-Permits.cfm>;
 - c. Is designated as a regulated MS4 pursuant to 40 CFR 122.32; or
 - d. This permit may also authorize an operator of a MS4 covered by this permit for discharges from areas of a regulated small MS4 located outside an Urbanized Areas or areas designated by the Director provided the permittee complies with all permit conditions in all areas covered under the permit.
2. **Potentially Eligible MS4s.** MS4s located within the following jurisdictions and other areas, including any designated by the Director, are potentially eligible for authorization under this permit:
 - City of Albuquerque
 - AMAFCA (Albuquerque Metropolitan Arroyo Flood Control Authority)
 - UNM (University of New Mexico)
 - NMDOT (New Mexico Department of Transportation District 3)
 - Bernalillo County
 - Sandoval County
 - Village of Corrales
 - City of Rio Rancho
 - Los Ranchos de Albuquerque
 - KAFB (Kirtland Air Force Base)
 - Town of Bernalillo
 - EXPO (State Fairgrounds/Expo NM)
 - SSCAFCA (Southern Sandoval County Arroyo Flood Control Authority)
 - ESCAFCA (Eastern Sandoval County Arroyo Flood Control Authority)
 - Sandia Laboratories, Department of Energy (DOE)
 - Pueblo of Sandia
 - Pueblo of Isleta
 - Pueblo of Santa Ana
3. **Eligibility.** To be eligible for this permit, the operator of the MS4 must provide:
 - a. **Public Participation:** Prior submitting the Notice of Intent (NOI), the operator of the MS4 must follow the local notice and comment to procedures at Part I.D.5.h.(i).
 - b. **National Historic Preservation Act (NHPA) Eligibility Provisions**

In order to be eligible for coverage under this permit, the applicant must be in compliance with the National Historic Preservation Act. Discharges may be authorized under this permit only if:

- (i) Criterion A: storm water discharges, allowable non-storm water discharges, and discharge-related activities do not affect a property that is listed or is eligible for listing on the National Register of Historic Places as maintained by the Secretary of the Interior; or
- (ii) Criterion B: the applicant has obtained and is in compliance with a written agreement with the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO) (or equivalent tribal authority) that outlines all measures the MS4 operator will undertake to mitigate or prevent adverse effect to the historic property.

Appendix C of this permit provides procedures and references to assist with determining permit eligibility concerning this provision. You must document and incorporate the results of your eligibility determination in your SWMP.

The permittee shall also comply with the requirements in Part IV.U.

4. **Authorized Non-Stormwater Discharges.** The following non-stormwater discharges need not be prohibited unless determined by the permittees, U.S. Environmental Protection Agency (EPA), or New Mexico Environment Department (NMED) to be significant contributors of pollutants to the municipal separate storm sewer system (MS4). Any such discharge that is identified as significant contributor pollutants to the MS4, or as causing or contributing to a water quality standards violation, must be addressed as an illicit discharge under the illicit discharge and improper disposal practices established pursuant to Part I.D.5.e of this permit. For all of the discharges listed below, not treated as illicit discharges, the permittee must document the reason these discharges are not expected to be significant contributors of pollutants to the MS4. This documentation may be based on either the nature of the discharge or any pollution prevention/treatment requirements placed on such discharges by the permittee.

- potable water sources, including routine water line flushing;
- lawn, landscape, and other irrigation waters provided all pesticides, herbicides and fertilizers have been applied in accordance with approved manufacturing labeling and any applicable permits for discharges associated with pesticide, herbicide and fertilizer application;
- diverted stream flows;
- rising ground waters;
- uncontaminated groundwater infiltration (as defined at 40 CFR §35.2005 (20));
- uncontaminated pumped groundwater;
- foundation and footing drains;
- air conditioning or compressor condensate;
- springs;
- water from crawl space pumps;
- individual residential car washing;
- flows from riparian habitats and wetlands;
- dechlorinated swimming pool discharges;
- street wash waters that do not contain detergents and where no un-remediated spills or leaks of toxic or hazardous materials have occurred;
- discharges or flows from fire fighting activities (does not include discharges from fire fighting training activities); and,
- other similar occasional incidental non-stormwater discharges (e.g. non-commercial or charity car washes, etc.)

5. **Limitations of Coverage.** This permit does not authorize:

- a. **Non-Storm Water:** Discharges that are mixed with sources of non-storm water unless such non-storm water discharges are:
 - (i) In compliance with a separate NPDES permit; or
 - (ii) Exempt from permitting under the NPDES program; or

(iii) Determined not to be a substantial contributor of pollutants to waters of the United States. See Part I.A.4.

- b. Industrial Storm Water: Storm water discharges associated with industrial activity as defined in 40 CFR §122.26(b)(14)(i)-(ix) and (xi).
- c. Construction Storm Water: Storm water discharges associated with construction activity as defined in 40 CFR §122.26(b)(14)(x) or 40 CFR §122.26(b)(15).
- d. Currently Permitted Discharges: Storm water discharges currently covered under another NPDES permit.
- e. Discharges Compromising Water Quality: Discharges that EPA, prior to authorization under this permit, determines will cause, have the reasonable potential to cause, or contribute to an excursion above any applicable water quality standard. Where such a determination is made prior to authorization, EPA may notify you that an individual permit application is necessary in accordance with Part IV.M. However, EPA may authorize your coverage under this permit after you have included appropriate controls and implementation procedures in your SWMP designed to bring your discharge into compliance with water quality standards.
- f. Discharges Inconsistent with a TMDL: You are not eligible for coverage under this permit for discharges of pollutants of concern to waters for which there is an applicable total maximum daily load (TMDL) established or approved by EPA unless you incorporate into your SWMP measures or controls that are consistent with the assumptions and requirements of such TMDL. To be eligible for coverage under this general permit, you must incorporate documentation into your SWMP supporting a determination of permit eligibility with regard to waters that have an EPA-established or approved TMDL. If a wasteload allocation has been established that would apply to your discharge, you must comply with the requirements established in Part I.C.2.b.(i). Where an EPA-approved or established TMDL has not specified a wasteload allocation applicable to municipal storm water discharges, but has not specifically excluded these discharges, adherence to a SWMP that meets the requirements in Part I.C.2.b.(ii) of this general permit will be presumed to be consistent with the requirements of the TMDL. If the EPA-approved or established TMDL specifically precludes such discharges, the operator is not eligible for coverage under this general permit.

6. Authorization Under This General Permit

- a. Obtaining Permit Coverage.
 - (i) An MS4 operator seeking authorization to discharge under this general permit must submit electronically a complete notice of intent (NOI) to the e-mail address provided in Part I.B.3 (see suggested EPA R6 MS4 NOI format located in EPA website at <http://epa.gov/region6/water/npdes/sw/ms4/index.htm>), in accordance with the deadlines in Part I.B.1 of this permit. The NOI must include the information and attachments required by Parts I.B.2, Part I.A.3, Part I.D.5.h.(i), and I.A.5.f of this permit. By submitting a signed NOI, the applicant certifies that all eligibility criteria for permit coverage have been met. If EPA notifies a discharger (either directly, by public notice, or by making information available on the Internet) of other NOI options that become available at a later date, such as electronic submission of forms or information, the MS4 operator may take advantage of those options to satisfy the NOI submittal requirements.
 - (ii) If an operator changes or a new operator is added after an NOI has been submitted, the operator must submit a new or revised NOI to EPA.
 - (iii) An MS4 operator who submits a complete NOI and meets the eligibility requirements in Part I of this permit is authorized to discharge storm water from the MS4 under the terms and conditions of this general permit only upon written notification by the Director. After review of the NOI and any public comments on the NOI, EPA may condition permit coverage on correcting any deficiencies or on including a schedule to respond to any public comments. (See also Parts I.A.3 and Part I.D.5.h.(i).)

- (iv) If EPA notifies the MS4 operator of deficiencies or inadequacies in any portion of the NOI (including the SWMP), the MS4 operator must correct the deficient or inadequate portions and submit a written statement to EPA certifying that appropriate changes have been made. The certification must be submitted within the time-frame specified by EPA and must specify how the NOI has been amended to address the identified concerns.
- (v) The NOI must be signed and certified in accordance with Parts IV.H.1 and 4. Signature for the NOI, which effectively takes the place of an individual permit application, may not be delegated to a lower level under Part IV.H.2

b. Terminating Coverage.

- (i) A permittee may terminate coverage under this general permit by submitting a notice of termination (NOT). Authorization to discharge terminates at midnight on the day the NOT is post-marked for delivery to EPA.
- (ii) A permittee must submit an NOT to EPA within 30 days after the permittee:
 - (a) Ceases discharging storm water from the MS4,
 - (b) Ceases operations at the MS4, or
 - (c) Transfers ownership of or responsibility for the facility to another operator.
- (iii) The NOT will consist of a letter to EPA and must include the following information:
 - (a) Name, mailing address, and location of the MS4 for which the notification is submitted;
 - (b) The name, address and telephone number of the operator addressed by the NOT;
 - (c) The NPDES permit number for the MS4;
 - (d) An indication of whether another operator has assumed responsibility for the MS4, the discharger has ceased operations at the MS4, or the storm water discharges have been eliminated; and
 - (e) The following certification:

I certify under penalty of law that all storm water discharges from the identified MS4 that are authorized by an NPDES general permit have been eliminated, or that I am no longer the operator of the MS4, or that I have ceased operations at the MS4. I understand that by submitting this Notice of Termination I am no longer authorized to discharge storm water under this general permit, and that discharging pollutants in storm water to waters of the United States is unlawful under the Clean Water Act where the discharge is not authorized by an NPDES permit. I also understand that the submission of this Notice of Termination does not release an operator from liability for any violations of this permit or the Clean Water Act.
 - (f) NOTs, signed in accordance with Part IV.H.1 of this permit, must be sent to the e-mail address in Part I.B.3. Electronic submittal of the NOT required in the permit using a compatible Integrated Compliance Information System (ICIS) format would be allowed if available.

B. NOTICE OF INTENT REQUIREMENTS

1. Deadlines for Notification.

- a. Designations: Small MS4s automatically designated under 40 CFR 122.32(a)(1), large MS4s located within the corporate boundary of the COA including the COA and former co-permittees under the NPDES permit No

NMS000101, and MS4s designated under 40 CFR 122.26(a)(1)(v), 40 CFR 122.26(a)(9)(i)(C) or (D), or 40 CFR 122.32(a)(2) are required to submit individual NOIs by the dates listed in Table 1. Any MS4 designated as needing a permit after issuance of this permit will be given an individualized deadline for NOI submittal by the Director at the time of designation.

In lieu of creating duplicate program elements for each individual permittee, implementation of the SWMP, as required in Part I.D, may be achieved through participation with other permittees, public agencies, or private entities in cooperative efforts to satisfy the requirements of Part D. For these programs with cooperative elements, the permittee may submit individual NOIs as established in Table 1. See also “Permittees with Cooperative Elements in their SWMP ” under Part.I.B.4 and “Shared Responsibilities and Cooperative Programs” under Part I.D.3.

Table 1 Deadlines to Submit NOI

Permittee Class Type	NOI Deadlines
Class A: MS4s within the Cooperate Boundary of the COA including former co-permittees under the NPDES permit No NMS000101	90 days from effective date of the permit or 180 days from effective date of the permit if participating in cooperative programs for one or more program elements.
Class B: MS4s designated under 40 CFR 122.32(a)(1). Based on 2000 Decennial Census Map	90 days from effective date of the permit or 180 days from effective date of the permit if participating in cooperative programs for one or more program elements.
Class C: MS4s designated under 40 CFR 122.26(a)(1)(v), 40 CFR 122.26(a)(9)(i)(C) or (D), or 40 CFR 122.32(a)(2) or MS4s newly designated under 122.32(a)(1) based on 2010 Decennial Census Map	180 days from effective date of the permit or notice of designation, unless the notice of designation grants a later date or; 180 days from effective date of the permit if participating in cooperative programs for one or more program elements.
Class D: MS4s within Indian Country Lands designed under 40 CFR 122.26(a)(1)(v), 122.26(a)(9)(i)(C) or (D), 122.32(a)(1), or 122.32(a)(2)	180 days from effective date of the permit or notice of designation, unless the notice of designation grants a later date or; 180 days from effective date of the permit if participating in cooperative programs for one or more program elements.

See Appendix A for list of potential permittees in the Middle Rio Grande Watershed

- b. New Operators. For new operators of all or a part of an already permitted MS4 (due to change on operator or expansion of the MS4) who will take over implementation of the existing SWMP covering those areas, the NOI must be submitted 30 days prior to taking over operational control of the MS4. Existing permittees who are expanding coverage of their MS4 area (e.g., city annexes part of unincorporated county MS4) are not required to submit a new NOI, but must comply with Part I.D.6.d.
- c. Submitting a Late NOI. MS4s not able to meet the NOI deadline in Table I and Part I.B.1.b due to delays in determining eligibility should notify EPA of the circumstance and progress to date at the address in Part I.B.3 and then proceed with a late NOI. MS4 operators are not prohibited from submitting an NOI after the dates provided in Table I and Part I.B.1.b. If a late NOI is submitted, the authorization is only for discharges that occur after permit coverage is effective. The permitting authority reserves the right to take appropriate enforcement actions for any unpermitted discharges.
- d. End of Administrative Continued Coverage under Previous Permit. Administrative continuance is triggered by a timely reapplication. Discharges submitting an NOI for coverage under this permit are considered to have met

the timely reapplication requirement if NOI is submitted by the deadlines included in Table 1 of Part I.B.1. For MS4s previously covered under either NMS000101 or NMR040000, continued coverage under those permits ends: a) the day after the applicable deadline for submittal of an NOI if a complete NOI has not been submitted or b) upon notice of authorization under this permit if a complete and timely NOI is submitted.

2. **Contents of Notice of Intent.** An MS4 operator eligible for coverage under this general permit must submit an NOI to discharge under this general permit. The NOI will consist of a letter to EPA containing the following information (see suggested EPA R6 MS4 NOI Format located in EPA website at <http://www.epa.gov/region6/water/npdes/sw/ms4/index.htm>) and must be signed in accordance with Part IV.H of this permit:

- a. The legal name of the MS4 operator and the name of the urbanized area and core municipality (or Indian reservation/pueblo) in which the operator's MS4 is located;
- b. The full facility mailing address and telephone number;
- c. The name and phone number of the person or persons responsible for overall coordination of the SWMP;
- d. An attached location map showing the boundaries of the MS4 under the applicant's jurisdiction. The map must include streets or other demarcations so that the exact boundaries can be located;
- e. The area of land served by the applicant's MS4 (in square miles);
- f. The latitude and longitude of the approximate center of the MS4;
- g. The name(s) of the waters of the United States that receive discharges from the system.
- h. If the applicant is participating in a cooperative program element or is relying on another entity to satisfy one or more permit obligations (see Part I.D.3), identify the entity(ies) and the element(s) the entity(ies) will be implementing;
- i. Information on each of the storm water minimum control measures in Part I.D.5 of this permit and how the SWMP will reduce pollutants in discharges to the Maximum Extent Practicable. For each minimum control measure, include the following:
 - (i) Description of the best management practices (BMPs) that will be implemented;
 - (ii) Measurable goals for each BMP; and
 - (iii) Time frames (i.e., month and year) for implementing each BMP;
- j. Based on the requirements of Part I.A.3.b describe how the eligibility criteria for historic properties have been met;
- k. Indicate whether or not the MS4 discharges to a receiving water for which EPA has approved or developed a TMDL. If so, describe how the eligibility requirements of Part I.A.5.f and Part I.C.2 have been met.

Note: If an individual permittee or a group of permittees seeks an alternative sub-measurable goal for TMDL controls under Part I.C.2.b.(i).(c).B, the permittee or a group of permittees must submit a preliminary proposal with the NOI. This proposal shall include, but is not limited to, the elements included in Appendix B under Section B.2.

- l. Signature and certification by an appropriate official (see Part IV.H). The NOI must include the certification statement from Part IV.H.4.

3. **Where to Submit.** The MS4 operator must submit the signed NOI to EPA via e-mail at R6_MS4Permits@epa.gov (note: there is an underscore between R6 and MS4) and NMED to the address provided in Part III.D.4. See also Part III.D.4 to determine if a copy must be provided to a Tribal agency.

The following MS4 operators: AMAFCA, Sandoval County, Village of Corrales, City of Rio Rancho, Town of Bernalillo, SSCAFCA, and ESCAFCA must submit the signed NOI to the Pueblo of Sandia to the address provided in Part III.D.4.

Note: See suggested EPA R6 MS4 NOI Format located in EPA website at <http://www.epa.gov/region6/water/npdes/sw/ms4/index.htm>. A complete copy of the signed NOI should be maintained on site. Electronic submittal of the documents required in the permit using a compatible Integrated Compliance Information System (ICIS) format would be allowed if available.

4. **Permittees with Cooperative Elements in their SWMP.** Any MS4 that meets the requirements of Part I.A of this general permit may choose to partner with one or more other regulated MS4 to develop and implement a SWMP or SWMP element. The partnering MS4s must submit separate NOIs and have their own SWMP, which may incorporate jointly developed program elements. If responsibilities are being shared as provided in Part I.D.3 of this permit, the SWMP must describe which permittees are responsible for implementing which aspects of each of the minimum measures. All MS4 permittees are subject to the provisions in Part I.D.6.

Each individual MS4 in a joint agreement implementing a permit condition will be independently assessed for compliance with the terms of the joint agreement. Compliance with that individual MS4s obligations under the joint agreement will be deemed compliance with that permit condition. Should one or more individual MS4s fail to comply with the joint agreement, causing the joint agreement program to fail to meet the requirements of the permit, the obligation of all parties to the joint agreement is to develop within 30 days and implement within 90 days an alternative program to satisfy the terms of the permit.

C. SPECIAL CONDITIONS

1. **Compliance with Water Quality Standards.** Pursuant to Clean Water Act §402(p)(3)(B)(iii) and 40 CFR §122.44(d)(1), this permit includes provisions to ensure that discharges from the permittee's MS4 do not cause or contribute to exceedances of applicable surface water quality standards, in addition to requirements to control discharges to the maximum extent practicable (MEP) set forth in Part I.D. Permittees shall address stormwater management through development of the SWMP that shall include the following elements and specific requirements included in Part VI.
 - a. Permittee's discharges shall not cause or contribute to an exceedance of surface water quality standards (including numeric and narrative water quality criteria) applicable to the receiving waters. In determining whether the SWMP is effective in meeting this requirement or if enhancements to the plan are needed, the permittee shall consider available monitoring data, visual assessment, and site inspection reports.
 - b. Applicable surface water quality standards for discharges from the permittees' MS4 are those that are approved by EPA and any other subsequent modifications approved by EPA upon the effective date of this permit found at New Mexico Administrative Code §20.6.4. Discharges from various portions of the MS4 also flow downstream into waters with Pueblo of Isleta and Pueblo of Sandia Water Quality Standards;
 - c. The permittee shall notify EPA and the Pueblo of Isleta in writing as soon as practical but not later than thirty (30) calendar days following each Pueblo of Isleta water quality standard exceedance at an in-stream sampling location. In the event that EPA determines that a discharge from the MS4 causes or contributes to an exceedance of applicable surface water quality standards and notifies the permittee of such an exceedance, the permittee shall, within sixty (60) days of notification, submit to EPA, NMED, Pueblo of Isleta (upon request) and Pueblo of Sandia (upon request), a report that describes controls that are currently being implemented and additional controls that will be implemented to prevent pollutants sufficient to ensure that the discharge will no longer cause or contribute to an exceedance of applicable surface water quality standards. The permittee shall implement such additional controls upon notification by EPA and shall incorporate such measures into their SWMP as described in Part I.D of this permit. NMED or the affected Tribe may provide information

documenting exceedances of applicable water quality standards caused or contributed to by the discharges authorized by this permit to EPA Region 6 and request EPA take action under this paragraph.

- d. Phase I Dissolved Oxygen Program (Applicable only to the COA and AMAFCA as a continuation of program in 2012 NMS000101 individual permit): Within one year from effective date of the permit, the permittees shall revise the May 1, 2012 Strategy to continue taking measures to address concerns regarding discharges to the Rio Grande by implementing controls to eliminate conditions that cause or contribute to exceedances of applicable dissolved oxygen water quality standards in waters of the United States. The permittees shall:
 - (i) Continue identifying structural elements, natural or man-made topographical and geographical formations, MS4 operations activities, or oxygen demanding pollutants contributing to reduced dissolved oxygen in the receiving waters of the Rio Grande. Both dry and wet weather discharges shall be addressed. Assessment may be made using available data or collecting additional data;
 - (ii) Continue implementing controls, and updating/revising as necessary, to eliminate structural elements or the discharge of pollutants at levels that cause or contribute to exceedances of applicable water quality standards for dissolved oxygen in waters of the United States;
 - (iii) To verify the remedial action in the North Diversion Channel Embayment, the COA and AMAFCA shall continue sampling for DO and temperature until the data indicate the discharge does not exceed applicable dissolved oxygen water quality standards in waters of the United States; and
 - (iv) Submit a revised strategy to FWS for consultation and EPA for approval from a year of effective date of the permit and progress reports with the subsequent Annual Reports. Progress reports to include:
 - (a) Summary of data.
 - (b) Activities undertaken to identify MS4 discharge contribution to exceedances of applicable dissolved oxygen water quality standards in waters of the United States. Including summary of findings of the assessment required in Part I.C.1.d.(i).
 - (c) Conclusions drawn, including support for any determinations.
 - (d) Activities undertaken to eliminate MS4 discharge contribution to exceedances of applicable dissolved oxygen water quality standards in waters of the United States.
 - (e) Account of stakeholder involvement.
- e. PCBs (Applicable only to the COA and AMAFCA as a continuation of program in 2012 NMS000101 individual permit and Bernalillo County): The permittee shall address concerns regarding PCBs in channel drainage areas specified in Part I.C.1.e.(vi) by developing or continue updating/revising and implementing a strategy to identify and eliminate controllable sources of PCBs that cause or contribute to exceedances of applicable water quality standards in waters of the United States. Bernalillo County shall submit the proposed PCB strategy to EPA within two (2) years from the effective date of the permit and submit a progress report with the third and with subsequent Annual Reports. COA and AMAFCA shall submit a progress report with the first and with the subsequent Annual Reports. The progress reports shall include:
 - (i) Summary of data.
 - (ii) Findings regarding controllable sources of PCBs in the channel drainages area specified in Part I.C.1.e.(vi) that cause or contribute to exceedances of applicable water quality standards in waters of the United States via the discharge of municipal stormwater.
 - (iii) Conclusions drawn, including supporting information for any determinations.

(iv) Activities undertaken to eliminate controllable sources of PCBs in the drainage areas specified in Part I.C.1.e.(vi) that cause or contribute to exceedances of applicable water quality standards in waters of the United States via the discharge of municipal stormwater including proposed activities that extend beyond the five (5) year permit term.

(v) Account of stakeholder involvement in the process.

(vi) Channel Drainage Areas: The PCB strategy required in Part I.C.1.e is only applicable to:

COA and AMAFCA Channel Drainage Areas:

- San Jose Drain
- North Diversion Channel

Bernalillo County Channel Drainage Areas:

- Adobe Acres Drain
- Alameda Outfall Channel
- Paseo del Norte Outfall Channel
- Sanchez Farm Drainage Area

A cooperative strategy to address PCBs in the COA, AMAFCA and Bernalillo County's drainage areas may be developed between Bernalillo County, AMAFCA, and the COA. If a cooperative strategy is developed, the cooperative strategy shall be submitted to EPA within three (3) years from the effective date of the permit and submit a progress report with the fourth and with subsequent Annual Reports,

Note: COA and AMAFCA must continue implementing the existing PCB strategy until a new Cooperative PCB Strategy is submitted to EPA.

- f. Temperature (Applicable only to the COA and AMAFCA as a continuation of program in 2012 NMS000101 individual permit): The permittees must continue assessing the potential effect of stormwater discharges in the Rio Grande by collecting and evaluating additional data. If the data indicates there is a potential of stormwater discharges contributing to exceedances of applicable temperature water quality standards in waters of the United States, within thirty (30) days such as findings, the permittees must develop and implement a strategy to eliminate conditions that cause or contribute to these exceedances. The strategy must include:
- (i) Identify structural controls, post construction design standards, or pollutants contributing to raised temperatures in the receiving waters of the Rio Grande. Both dry and wet weather discharges shall be addressed. Assessment may be made using available data or collecting additional data;
 - (ii) Develop and implement controls to eliminate structural controls, post construction design standards, or the discharge of pollutants at levels that cause or contribute to exceedances of applicable water quality standards for temperature in waters of the United States; and
 - (iii) Provide a progress report with the first and with subsequent Annual Reports. The progress reports shall include:
 - (a) Summary of data.
 - (b) Activities undertaken to identify MS4 discharge contribution to exceedances of applicable temperature water quality standards in waters of the United States.
 - (c) Conclusions drawn, including supporting information for any determinations.
 - (d) Activities undertaken to reduce MS4 discharge contribution to exceedances of applicable temperature water quality standards in waters of the United States.
 - (e) Accounting of stakeholder involvement.

2. **Discharges to Impaired Waters with and without approved TMDLs.** Impaired waters are those that have been identified pursuant to Section 303(d) of the Clean Water Act as not meeting applicable surface water quality standards. This may include both waters with EPA-approved Total Maximum Daily Loads (TMDLs) and those for which a TMDL has not yet been approved. For the purposes of this permit, the conditions for discharges to impaired waters also extend to controlling pollutants in MS4 discharges to tributaries to the listed impaired waters in the Middle Rio Grande watershed boundary identified in Appendix A.
- a. Discharges of pollutant(s) of concern to impaired water bodies for which there is an EPA approved total maximum daily load (TMDL) are not eligible for this general permit unless they are consistent with the approved TMDL. A water body is considered impaired for the purposes of this permit if it has been identified, pursuant to the latest EPA approved CWA §303(d) list, as not meeting New Mexico Surface Water Quality Standards.
 - b. The permittee shall control the discharges of pollutant(s) of concern to impaired waters and waters with approved TMDLs as provided in sections (i) and (ii) below, and shall assess the success in controlling those pollutants.
 - (i) **Discharges to Water Quality Impaired Water Bodies with an Approved TMDL**
If the permittee discharges to an impaired water body with an approved TMDL (see Appendix B), where stormwater has the potential to cause or contribute to the impairment, the permittee shall include in the SWMP controls targeting the pollutant(s) of concern along with any additional or modified controls required in the TMDL and this section. The SWMP and required annual reports must include information on implementing any focused controls required to reduce the pollutant(s) of concern as described below:
 - (a) Targeted Controls: The SWMP submitted with the first annual report must include a detailed description of all targeted controls to be implemented, such as identifying areas of focused effort or implementing additional Best Management Practices (BMPs) that will be implemented to reduce the pollutant(s) of concern in the impaired waters.
 - (b) Measurable Goals: For each targeted control, the SWMP must include a measurable goal and an implementation schedule describing BMPs to be implemented during each year of the permit term. Where the impairment is for bacteria, the permittee must, at minimum comply with the activities and schedules described in Table 1.a of Part I.C.2.(iii).
 - (c) Identification of Measurable Goal: The SWMP must identify a measurable goal for the pollutant(s) of concern. The value of the measurable goal must be based on one of the following options:
 - A. If the permittee is subject to a TMDL that identifies an aggregate Waste Load Allocation (WLA) for all or a class of permitted MS4 stormwater sources, then the SWMP may identify such WLA as the measurable goal. Where an aggregate WLA measurable goal is used, all affected MS4 operators are jointly responsible for progress in meeting the measurable goal and shall (jointly or individually) develop a monitoring/assessment plan. This program element may be coordinated with the monitoring required in Part III.A.
 - B. Alternatively, if multiple permittees are discharging into the same impaired water body with an approved TMDL (which has an aggregate WLA for all permitted stormwater MS4s), the MS4s may combine or share efforts, in consultation with/and the approval of NMED, to determine an alternative sub-measurable goal derived from the WLA for the pollutant(s) of concern (e.g., bacteria) for their respective MS4. The SWMP must clearly define this alternative approach and must describe how the sub-measurable goals would cumulatively support the aggregate WLA. Where an aggregate WLA measurable goal has been broken into sub-measurable goals for individual MS4s, each permittee is only responsible for progress in meeting its WLA sub-measurable goal.

- C. If the permittee is subject to an individual WLA specifically assigned to that permittee, the measurable goal must be the assigned WLA. Where WLAs have been individually assigned, or where the permittee is the only regulated MS4 within the urbanized area that is discharging into the impaired watershed with an approved TMDL, the permittee is only responsible for progress in meeting its WLA measurable goal.
- (d) Annual Report: The annual report must include an analysis of how the selected BMPs have been effective in contributing to achieving the measurable goal and shall include graphic representation of pollutant trends, along with computations of annual percent reductions achieved from the baseline loads and comparisons with the target loads.
- (e) Impairment for Bacteria: If the pollutant of concern is bacteria, the permittee shall include focused BMPs addressing the five areas below, as applicable, in the SWMP and implement as appropriate. If a TMDL Implementation Plan (a plan created by the State or a Tribe) is available, the permittee may refer to the TMDL Implementation Plan for appropriate BMPs. The SWMP and annual report must include justification for not implementing a particular BMP included in the TMDL Implementation Plan. The permittee may not exclude BMPs associated with the minimum control measures required under 40 CFR §122.34 from their list of proposed BMPs. The BMPs shall, as appropriate, address the following:
- A. Sanitary Sewer Systems
 - Make improvements to sanitary sewers;
 - Address lift station inadequacies;
 - Identify and implement operation and maintenance procedures;
 - Improve reporting of violations; and
 - Strengthen controls designed to prevent over flows
 - B. On-site Sewage Facilities (for entities with appropriate jurisdiction)
 - Identify and address failing systems; and
 - Address inadequate maintenance of On-Site Sewage Facilities (OSSFs).
 - C. Illicit Discharges and Dumping
 - Place additional effort to reduce waste sources of bacteria; for example, from septic systems, grease traps, and grit traps.
 - D. Animal Sources
 - Expand existing management programs to identify and target animal sources such as zoos, pet waste, and horse stables.
 - E. Residential Education: Increase focus to educate residents on:
 - Bacteria discharging from a residential site either during runoff events or directly;
 - Fats, oils, and grease clogging sanitary sewer lines and resulting overflows;
 - Decorative ponds; and
 - Pet waste.
- (f) Monitoring or Assessment of Progress: The permittee shall monitor or assess progress in achieving measurable goals and determining the effectiveness of BMPs, and shall include documentation of this monitoring or assessment in the SWMP and annual reports. In addition, the SWMP must include methods to be used. This program element may be coordinated with the monitoring required in Part III.A. The permittee may use the following methods either individually or in conjunction to evaluate progress towards the measurable goal and improvements in water quality as follows:
- A. Evaluating Program Implementation Measures: The permittee may evaluate and report progress towards the measurable goal by describing the activities and BMPs implemented, by identifying the appropriateness of the identified BMPs, and by evaluating the success of implementing the measurable goals. The permittee may assess progress by using program implementation indicators

such as: (1) number of sources identified or eliminated; (2) decrease in number of illegal dumping; (3) increase in illegal dumping reporting; (4) number of educational opportunities conducted; (5) reductions in SSOs; or, 6) increase in illegal discharge detection through dry screening, etc.; and

B. Assessing Improvements in Water Quality: The permittee may assess improvements in water quality by using available data for segment and assessment units of water bodies from other reliable sources, or by proposing and justifying a different approach such as collecting additional instream or outfall monitoring data, etc. Data may be acquired from NMED, local river authorities, partnerships, and/or other local efforts as appropriate. Progress towards achieving the measurable goal shall be reported in the annual report. Annual reports shall report the measurable goal and the year(s) during the permit term that the MS4 conducted additional sampling or other assessment activities.

- (g) Observing no Progress towards the Measurable Goal: If, by the end of the third year from the effective date of the permit, the permittee observes no progress toward the measurable goal either from program implementation or water quality assessments, the permittee shall identify alternative focused BMPs that address new or increased efforts towards the measurable goal. As appropriate, the MS4 may develop a new approach to identify the most significant sources of the pollutant(s) of concern and shall develop alternative focused BMPs (this may also include information that identifies issues beyond the MS4's control). These revised BMPs must be included in the SWMP and subsequent annual reports.

Where the permittee originally used a measurable goal based on an aggregated WLA, the permittee may combine or share efforts with other MS4s discharging to the same impaired stream segment to determine an alternative sub-measurable goal for the pollutant(s) of concern for their respective MS4s, as described in Part I.C.2.b.(i).(c).B above. Permittees must document, in their SWMP for the next permit term, the proposed schedule for the development and subsequent adoption of alternative sub-measurable goals for the pollutant(s) of concern for their respective MS4s and associated assessment of progress in meeting those individual goals.

(ii) Discharges Directly to Water Quality Impaired Water Bodies without an Approved TMDL:

The permittee shall also determine whether the permitted discharge is directly to one or more water quality impaired water bodies where a TMDL has not yet been approved by NMED and EPA. If the permittee discharges directly into an impaired water body without an approved TMDL, the permittee shall perform the following activities:

- (a) Discharging a Pollutant of Concern: The permittee shall:
- A. Determine whether the MS4 may be a source of the pollutant(s) of concern by referring to the CWA §303(d) list and then determining if discharges from the MS4 would be likely to contain the pollutant(s) of concern at levels of concern. The evaluation of CWA §303(d) list parameters should be carried out based on an analysis of existing data (e.g., Illicit Discharge and Improper Disposal Program) conducted within the permittee's jurisdiction.
 - B. Ensure that the SWMP includes focused BMPs, along with corresponding measurable goals, that the permittee will implement, to reduce, the discharge of pollutant(s) of concern that contribute to the impairment of the water body. (note: Only applicable if the permittee determines that the MS4 may discharge the pollutant(s) of concern to an impaired water body without a TMDL. The SWMP submitted with the first annual report must include a detailed description of proposed controls to be implemented along with corresponding measurable goals.
 - C. Amend the SWMP to include any additional BMPs to address the pollutant(s) of concern.
- (b) Impairment for Bacteria: Where the impairment is for bacteria, the permittee shall identify potential significant sources and develop and implement targeted BMPs to control bacteria from those sources (see Part I.C.2.b.(i).(e).A through E.. The permittee must, at minimum comply with the activities and

schedules described in Table 1.a of Part I.C.2.(iii). The annual report must include information on compliance with this section, including results of any sampling conducted by the permittee.

Note: Probable pollutant sources identified by permittees should be submitted to NMED on the following form: <ftp://ftp.nmenv.state.nm.us/www/swqb/Surveys/PublicProbableSourceIDSurvey.pdf>

- (c) **Impairment for Nutrients:** Where the impairment is for nutrients (e.g., nitrogen or phosphorus), the permittee shall identify potential significant sources and develop and implement targeted BMPs to control nutrients from potential sources. The permittee must, at minimum comply with the activities and schedules described in Table 1.b of Part I.C.2, (iii). The annual report must include information on compliance with this section, including results of any sampling conducted by the permittee.
- (d) **Impairment for Dissolved Oxygen:** See Endangered Species Act (ESA) Requirements in Part I.C.3. These program elements may be coordinated with the monitoring required in Part III.A.
- (iii) **Program Development and Implementation Schedules:** Where the impairment is for nutrient constituent (e.g., nitrogen or phosphorus) or bacteria, the permittee must at minimum comply with the activities and schedules in Table 1.a and Table 1.b.

Table 1.a. Pre-TMDL Bacteria Program Development and Implementation Schedules

Activity	Class Permittee				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
Identify potential significant sources of the pollutant of concern entering your MS4	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Sixteen (16) months from effective date of permit
Develop (or modify an existing program ***) and implement a public education program to reduce the discharge of bacteria in municipal storm water contributed by (if applicable) by pets, recreational and exhibition livestock, and zoos.	Twelve (12) months from effective date of permit	Twelve (12) months from effective date of permit	Fourteen (14) months from effective date of permit	Fourteen (14) months from effective date of permit	Sixteen (16) months from effective date of permit
Develop (or modify an existing program ***) and implement a program to reduce the discharge of bacteria in municipal storm water contributed by areas within your MS4 served by on-site wastewater treatment systems.	Fourteen (14) months from effective date of permit	Fourteen (14) months from effective date of permit	Sixteen (16) months from effective date of permit	Sixteen (16) months from effective date of permit	Eighteen (18) months from effective date of permit
Review results to date from the Illicit Discharge Detection and Elimination program (see Part I.D.5.e) and modify as necessary to prioritize the detection and elimination of discharges contributing bacteria to the MS4	Fourteen (14) months from effective date of permit	Fourteen (14) months from effective date of permit	Sixteen (16) months from effective date of permit	Sixteen (16) months from effective date of permit	Eighteen (18) months from effective date of permit

Develop (or modify an existing program ***) and implement a program to reduce the discharge of bacteria in municipal storm water contributed by other significant source identified in the Illicit Discharge Detection and Elimination program (see Part I.D.5.e)	Sixteen (16) months from effective date of permit	Sixteen (16) months from effective date of permit	Eighteen (18) months from effective date of permit	Eighteen (18) months from effective date of permit	Twenty (20) months from effective date of permit
Include in the Annual Reports progress on program implementation and reducing the bacteria and updates their measurable goals as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs

(**) or MS4s designated by the Director

(***) Permittees previously covered under permit NMS000101 or NMR040000

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

Table 1.b. Pre-TMDL Nutrient Program Development and Implementation Schedules

Activity	Class Permittee				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
Identify potential significant sources of the pollutant of concern entering your MS4	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Sixteen (16) months from effective date of permit
Develop (or modify an existing program ***) and implement a public education program to reduce the discharge of pollutant of concern in municipal storm water contributed by residential and commercial use of fertilizer	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Sixteen (16) months from effective date of permit
Develop (or modify an existing program ***) and implement a program to reduce the discharge of the pollutant of concern in municipal storm water contributed by fertilizer use at municipal operations (e.g., parks, roadways, municipal facilities)	One (1) year from effective date of permit	One (1) year from effective date of permit	Sixteen (16) months from effective date of permit	Sixteen (16) months from effective date of permit	Eighteen (18) months from effective date of permit

Develop (or modify an existing program ***) and implement a program to reduce the discharge of the pollutant of concern in municipal storm water contributed by municipal and private golf courses within your jurisdiction	One (1) year from effective date of permit	One (1) year from effective date of permit	Sixteen (16) months from effective date of permit	Sixteen (16) months from effective date of permit	Eighteen (18) months from effective date of permit
Develop (or modify an existing program ***) and implement a program to reduce the discharge of the pollutant of concern in municipal storm water contributed by other significant source identified in the Illicit Discharge Detection and Elimination program (see Part I.D.5.e)	One (1) year from effective date of permit	One (1) year from effective date of permit	Sixteen (16) months from effective date of permit	Sixteen (16) months from effective date of permit	Eighteen (18) months from effective date of permit
Include in the Annual Reports progress on program implementation and reducing the nutrient pollutant of concern and updates their measurable goals	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs

(**) or MS4s designated by the Director

(***) Permittees previously covered under permit NMS000101 or NMR040000

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

These program elements may be coordinated with the monitoring required in Part III.A.

3. **Endangered Species Act (ESA) Requirements.** Consistent with U.S. FWS Biological Opinion dated August 21, 2014 to ensure actions required by this permit are not likely to jeopardize the continued existence of any currently listed as endangered or threatened species or adversely affect its critical habitat, permittees shall meet the following requirements and include them in the SWMP:

- a. **Dissolved Oxygen Strategy in the Receiving Waters of the Rio Grande:**

- (i) The permittees must identify (or continue identifying if previously covered under permit NMS000101) structural controls, natural or man-made topographical and geographical formations, MS4 operations, or oxygen demanding pollutants contributing to reduced dissolved oxygen in the receiving waters of the Rio Grande. The permittees shall implement controls, and update/revise as necessary, to eliminate discharge of pollutants at levels that cause or contribute to exceedances of applicable water quality standards for dissolved oxygen in waters of the Rio Grande. The permittees shall submit a summary of findings and a summary of activities undertaken under Part I.C.3.a.(i) with each Annual Report. The SWMP submitted with the first and fourth annual reports must include a detailed description of controls implemented (or/and proposed control to be implemented) along with corresponding measurable goals. (Applicable to all permittees).
- (ii) As required in Part I.C.1.d, the COA and AMAFCA shall revise the May 1, 2012 Strategy for dissolved oxygen to address dissolved oxygen at the North Diversion Channel Embayment and/or other MS4 locations. The permittees shall submit the revised strategy to FWS and EPA for approval within a year of permit issuance and progress reports with the subsequent Annual Reports (see also Part I.C.1.d.(iv)). The permittees shall ensure that actions to reduce pollutants or remedial activities selected for the North Diversion Channel Embayment and its watershed are implemented such that there is a reduction in

frequency and magnitude of all low oxygen storm water discharge events that occur in the Embayment or downstream in the MRG as indicated in Table 1.c. Actions to meet the year 3 measurable goals must be taken within 2 years from the effective date of the permit. Actions to meet the year 5 measurable goals must be taken within 4 years from the effective date of the permit.

Table 1.c Measurable Goals of Anoxic and Hypoxia Levels Measured by Permit Year

<i>Permit Year</i>	<i>Anoxic Events*, max</i>	<i>Hypoxic Events**, max</i>
<i>Year 1</i>	<i>18</i>	<i>36</i>
<i>Year 2</i>	<i>18</i>	<i>36</i>
<i>Year 3</i>	<i>9</i>	<i>18</i>
<i>Year 4</i>	<i>9</i>	<i>18</i>
<i>Year 5</i>	<i>4</i>	<i>9</i>

Notes:

- * Anoxic Events: See Appendix G, for oxygen saturation and dissolved oxygen concentrations at various water temperatures and atmospheric pressures for the North Diversion Channel area that are considered anoxic and associated with the Rio Grande Silvery minnow lethality.
- ** Hypoxic Events: See Appendix for G, for oxygen saturation and dissolved oxygen concentrations at various water temperatures and atmospheric pressures for the North Diversion Channel area that are considered hypoxic and associated with the Rio Grande silvery minnow harassment.

(a) The revised strategy shall include:

- A. A Monitoring Plan describing all procedures necessary to continue conducting continuous monitoring of dissolved oxygen (DO) and temperature in the North Diversion Channel Embayment and at one (1) location in the Rio Grande downstream of the mouth of the North Diversion Channel within the action area (e.g., Central Bridge). The monitoring plan to be developed will describe the methodology used to assure its quality, and will identify the means necessary to address any gaps that occur during monitoring, in a timely manner (that is, within 24 to 48 hours).
- B. A Quality Assurance and Quality Control (QA/QC) Plan describing all standard operating procedures, quality assurance and quality control plans, maintenance, and implementation schedules that will assure timely and accurate collection and reporting of water temperature, dissolved oxygen, oxygen saturation, and flow. The QA/QC plan should include all procedures for estimating oxygen data when any oxygen monitoring equipment fail. Until a monitoring plan with quality assurance and quality control is submitted by EPA, any data, including any provisional or incomplete data from the most recent measurement period (e.g. if inoperative monitoring equipment for one day, use data from previous day) shall be used as substitutes for all values in the calculations for determinations of incidental takes. Given the nature of the data collected as surrogate for incidental take, all data, even provisional data (e.g., oxygen/water temperature data, associated metadata such as flows, date, times), shall be provided to the Service in a spreadsheet or database format within two weeks after formal request.

(b) Reporting: The COA and AMAFCA shall provide

- A. An Annual Incidental Take Report to EPA and the Service that includes the following information: beginning and end date of any qualifying stormwater events, dissolved oxygen values and water temperature in the North Diversion Channel Embayment, dissolved oxygen values and water temperature at a downstream monitoring station in the MRG, flow rate in the North Diversion Channel, mean daily flow rate in the MRG, evaluation of oxygen and temperature data

as either anoxic or hypoxic using Table 2 of the BO, and estimate the number of silvery minnows taken based on Appendix A of the BO. Electronic copy of The Annual Incidental Take Report should be provided with the Annual Report required under Part III.B no later than December 1 for the proceeding calendar year.

- B. A summary of data and findings with each Annual Report to EPA and the Service. All data collected (including provisional oxygen and water temperature data, and associated metadata), transferred, stored, summarized, and evaluated shall be included in the Annual Report. If additional data is requested by EPA or the Service, The COA and AMAFCA shall provide such as information within two weeks upon request,

The revised strategy required under Part I.C.3.a.(ii), the Annual Incidental Take Reports required under Part I.C.3.a.(ii).A, and Annual Reports required under Part III.B can be submitted to FWS via e-mail nmesfo@fws.gov and joel_lusk@fws.gov, or by mail to the New Mexico Ecological Services field office, 2105 Osuna Road NE, Albuquerque, New Mexico 87113. (Only Applicable to the COA and AMAFCA)

- b. Sediment Pollutant Load Reduction Strategy (Applicable to all permittees): The permittee must develop, implement, and evaluate a sediment pollutant load reduction strategy to assess and reduce pollutant loads associated with sediment (e.g., metals, etc. adsorbed to or traveling with sediment, as opposed to clean sediment) into the receiving waters of the Rio Grande. The strategy must include the following elements:
- (i) Sediment Assessment: The permittee must identify and investigate areas within its jurisdiction that may be contributing excessive levels (e.g., levels that may contribute to exceedance of applicable Water Quality Standards) of pollutants in sediments to the receiving waters of the Rio Grande as a result of stormwater discharges. The permittee must identify structural elements, natural or man-made topographical and geographical formations, MS4 operations activities, and areas indicated as potential sources of sediments pollutants in the receiving waters of the Rio Grande. At the time of assessment, the permittee shall record any observed erosion of soil or sediment along ephemeral channels, arroyos, or stream banks, noting the scouring or sedimentation in streams. The assessment should be made using available data from federal, state, or local studies supplemented as necessary with collection of additional data. The permittee must describe, in the first annual report, all standard operating procedures, quality assurance plans to assure that accurate data are collected, summarized, evaluated and reported.
 - (ii) Estimate Baseline Loading: Based on the results of the sediment pollutants assessment required in Part I.C.3.b.(i) above the permittee must provide estimates of baseline total sediment loading and relative potential for contamination of those sediments by urban activities for drainage areas, sub-watersheds, Impervious Areas (IAs), and/or Directly Connected Impervious Area (DCIAs) draining directly to a surface waterbody or other feature used to convey waters of the United States. Sediment loads may be provided for targeted areas in the entire Middle Rio Grande Watershed (see Appendix A) using an individual or cooperative approach. Any data available and/or preliminary numeric modeling results may be used in estimating loads.
 - (iii) Targeted Controls: Include a detailed description of all proposed targeted controls and BMPs that will be implemented to reduce sediment pollutant loads calculated in Part I.C.3.b.(ii) above during the next ten (10) years of permit issuance. For each targeted control, the permittee must include interim measurable goals (e.g., interim sediment pollutant load reductions) and an implementation and maintenance schedule, including interim milestones, for each control measure, and as appropriate, the months and years in which the MS4 will undertake the required actions. Any data available and/or preliminary numeric modeling results may be used in establishing the targeted controls, BMPs, and interim measurable goals. The permittee must prioritize pollutant load reduction efforts and target areas (e.g. drainage areas, sub-watersheds, IAs, DCIAs) that generate the highest annual average pollutant loads.
 - (iv) Monitoring and Interim Reporting: The permittee shall monitor or assess progress in achieving interim measurable goals and determining the effectiveness of BMPs, and shall include documentation of this

monitoring or assessment in the SWMP and annual reports. In addition, the SWMP must include methods to be used. This program element may be coordinated with the monitoring required in Part III.A.

- (v) Progress Evaluation and Reporting: The permittee must assess the overall success of the Sediment Pollutant Load Reduction Strategy and document both direct and indirect measurements of program effectiveness in a Progress Report to be submitted with the fifth Annual Report. Data must be analyzed, interpreted, and reported so that results can be applied to such purposes as documenting effectiveness of the BMPs and compliance with the ESA requirements specified in Part I.C.3.b. The Progress Report must include:
 - (a) A list of species likely to be within the action area;
 - (b) Type and number of structural BMPs installed;
 - (c) Evaluation of pollutant source reduction efforts;
 - (d) Any recommendation based on program evaluation;
 - (e) Description of how the interim sediment load reduction goals established in Part I.C.3.b.(iii) were achieved; and
 - (f) Future planning activities needed to achieve increase of sediment load reduction required in Part I.C.3.d.(iii).

(vi) Critical Habitat (Applicable to all permittees): Verify that the installation of stormwater BMPs will not occur in or adversely affect currently listed endangered or threatened species critical habitat by reviewing the activities and locations of stormwater BMP installation within the location of critical habitat of currently listed endangered or threatened species at the U.S. Fish and Wildlife service website <http://criticalhabitat.fws.gov/crithab/>.

D. STORMWATER MANAGEMENT PROGRAM (SWMP)

1. General Requirements. The permittee must develop, implement, and enforce a SWMP designed to reduce the discharge of pollutants from a MS4 to the maximum extent practicable (MEP), to protect water quality (including that of downstream state or tribal waters), and to satisfy applicable surface water quality standards. The permittees shall continue implementation of existing SWMPs, and where necessary modify or revise existing elements and/or develop new elements to comply with all discharges from the MS4 authorized in Part I.A. The updated SWMP shall satisfy all requirements of this permit, and be implemented in accordance with Section 402(p)(3)(B) of the Clean Water Act (Act), and the Stormwater Regulations (40 CFR §122.26 and §122.34). This permit does not extend any compliance deadlines set forth in the previous permits (NMS000101 with effective date March 1, 2012 and permits No: NM NMR040000 and NMR040001 with effective date July 1, 2007).

If a permittee is already in compliance with one or more requirements in this section because it is already subject to and complying with a related local, state, or federal requirement that is at least as stringent as this permit's requirement, the permittee may reference the relevant requirement as part of the SWMP and document why this permit's requirement has been satisfied. Where this permit has additional conditions that apply, above and beyond what is required by the related local, state, or federal requirement, the permittee is still responsible for complying with these additional conditions in this permit.

2. Legal Authority. Each permittee shall implement the legal authority granted by the State or Tribal Government to control discharges to and from those portions of the MS4 over which it has jurisdiction. The difference in each co-permittee's jurisdiction and legal authorities, especially with respect to third parties, may be taken into account in developing the scope of program elements and necessary agreements (i.e. Joint Powers Agreement, Memorandum of Agreement, Memorandum of Understanding, etc.). Permittees may use a combination of statute, ordinance, permit, contract, order, interagency or inter-jurisdictional agreement(s) with other permittees to:

- a. Control the contribution of pollutants to the MS4 by stormwater discharges associated with industrial activity and the quality of stormwater discharged from sites of industrial activity (applicable only to MS4s located within the corporate boundary of the COA);
- b. Control the discharge of stormwater and pollutants associated with land disturbance and development activities, both during the construction phase and after site stabilization has been achieved (post-construction), consistent with Part I.D.5.a and Part I.D.5.b;
- c. Prohibit illicit discharges and sanitary sewer overflows to the MS4 and require removal of such discharges consistent with Part I.D.5.e;
- d. Control the discharge of spills and prohibit the dumping or disposal of materials other than stormwater (e.g. industrial and commercial wastes, trash, used motor vehicle fluids, leaf litter, grass clippings, animal wastes, etc.) into the MS4;
- e. Control, through interagency or inter-jurisdictional agreements among permittees, the contribution of pollutants from one (1) portion of the MS4 to another;
- f. Require compliance with conditions in ordinances, permits, contracts and/or orders; and
- g. Carry out all inspection, surveillance and monitoring procedures necessary to maintain compliance with permit conditions.

3. **Shared Responsibility and Cooperative Programs.**

- a. The SWMP, in addition to any interagency or inter-jurisdictional agreement(s) among permittees, (e.g., the Joint Powers Agreement to be entered into by the permittees), shall clearly identify the roles and responsibilities of each permittee.
- b. Implementation of the SWMP may be achieved through participation with other permittees, public agencies, or private entities in cooperative efforts to satisfy the requirements of Part I.D in lieu of creating duplicate program elements for each individual permittee.
 - (i) Implementation of one or more of the control measures may be shared with another entity, or the entity may fully take over the measure. A permittee may rely on another entity only if:
 - (a) the other entity, in fact, implements the control measure;
 - (b) the control measure, or component of that measure, is at least as stringent as the corresponding permit requirement; or,
 - (c) the other entity agrees to implement the control measure on the permittee's behalf. Written acceptance of this obligation is expected. The permittee must maintain this obligation as part of the SWMP description. If the other entity agrees to report on the minimum measure, the permittee must supply the other entity with the reporting requirements in Part III.D of this permit. The permittee remains responsible for compliance with the permit obligations if the other entity fails to implement the control measure component.
- c. Each permittee shall provide adequate finance, staff, equipment, and support capabilities to fully implement its SWMP and all requirements of this permit.

4. **Measurable Goals.** The permittees shall control the discharge of pollutants from its MS4. The permittee shall implement the provisions set forth in Part I.D.5 below, and shall at a minimum incorporate into the SWMP the control measures listed in Part I.D.5 below. The SWMP shall include measurable goals, including interim milestones, for each control measure, and as appropriate, the months and years in which the MS4 will undertake the required actions and the frequency of the action.

5. **Control Measures.**

a. **Construction Site Stormwater Runoff Control.**

- (i) The permittee shall develop, revise, implement, and enforce a program to reduce pollutants in any stormwater runoff to the MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of stormwater discharges from construction activity disturbing less than one acre must be included in the program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more. **Permittees previously covered under permit NMS000101 or NMR040000 must continue existing programs, updating as necessary, to comply with the requirements of this permit.** (Note: Highway Departments and Flood Control Authorities may only apply the construction site stormwater management program to the permittees's own construction projects)
- (ii) The program must include the development, implementation, and enforcement of, at a minimum:
 - (a) An ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under State, Tribal or local law;
 - (b) Requirements for construction site operators to implement appropriate erosion and sediment control best management practices (both structural and non-structural);
 - (c) Requirements for construction site operators to control waste such as, but not limited to, discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality (see EPA guidance at <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=117>);
 - (d) Procedures for site plan review which incorporate consideration of potential water quality impacts. The site plan review must be conducted prior to commencement of construction activities, and include a review of the site design, the planned operations at the construction site, the planned control measures during the construction phase (including the technical criteria for selection of the control measures), and the planned controls to be used to manage runoff created after the development;
 - (e) Procedures for receipt and consideration of information submitted by the public;
 - (f) Procedures for site inspection (during construction) and enforcement of control measures, including provisions to ensure proper construction, operation, maintenance, and repair. The procedures must clearly define who is responsible for site inspections; who has the authority to implement enforcement procedures; and the steps utilized to identify priority sites for inspection and enforcement based on the nature of the construction activity, topography, and the characteristics of soils and the quality of the receiving water. If a construction site operator fails to comply with procedures or policies established by the permittee, the permittee may request EPA enforcement assistance. The site inspection and enforcement procedures must describe sanctions and enforcement mechanism(s) for violations of permit requirements and penalties with detail regarding corrective action follow-up procedures, including enforcement escalation procedures for recalcitrant or repeat offenders. Possible sanctions include non-monetary penalties (such as stop work orders and/or permit denials for non-compliance), as well as monetary penalties such as fines and bonding requirements;
 - (g) Procedures to educate and train permittee personnel involved in the planning, review, permitting, and/or approval of construction site plans, inspections and enforcement. Education and training shall also be provided for developers, construction site operators, contractors and supporting personnel, including requiring a stormwater pollution prevention plan for construction sites within the permittee's jurisdiction;
 - (h) Procedures for keeping records of and tracking all regulated construction activities within the MS4, i.e. site reviews, inspections, inspection reports, warning letters and other enforcement documents. A

summary of the number and frequency of site reviews, inspections (including inspector's checklist for oversight of sediment and erosion controls and proper disposal of construction wastes) and enforcement activities that are conducted annually and cumulatively during the permit term shall be included in each annual report; and

- (iii) Annually conduct site inspections of 100 percent of all construction projects cumulatively disturbing one (1) or more acres within the MS4 jurisdiction. Site inspections are to be followed by any necessary compliance or enforcement action. Follow-up inspections are to be conducted to ensure corrective maintenance has occurred; and, all projects must be inspected at completion for confirmation of final stabilization.
- (iv) The permittee must coordinate with all departments and boards with jurisdiction over the planning, review, permitting, or approval of public and private construction projects/activities within the permit area to ensure that the construction stormwater runoff controls eliminate erosion and maintain sediment on site. Planning documents include, but are not limited to: comprehensive or master plans, subdivision ordinances, general land use plan, zoning code, transportation master plan, specific area plans, such as sector plan, site area plans, corridor plans, or unified development ordinances.
- (v) The site plan review required in Part I.D.5.a.(ii)(d) must include an evaluation of opportunities for use of GI/LID/Sustainable practices and when the opportunity exists, encourage project proponents to incorporate such practices into the site design to mimic the pre-development hydrology of the previously undeveloped site. For purposes of this permit, pre-development hydrology shall be met according to Part I.D.5.b of this permit. (consistent with any limitations on that capture). Include a reporting requirement of the number of plans that had opportunities to implement these practices and how many incorporated these practices.
- (vi) The permittee must include in the SWMP a description of the mechanism(s) that will be utilized to comply with each of the elements required in Part I.D.5.a.(i) throughout Part I.D.5.a.(v), including description of each individual BMP (both structural or non-structural) or source control measures and its corresponding measurable goal.
- (vii) The permittee shall assess the overall success of the program, and document the program effectiveness in the annual report. The permittee must include in each annual report:
 - (a) A summary of the frequency of site reviews, inspections and enforcement activities that are conducted annually and cumulatively during the permit term.
 - (b) The number of plans that had the opportunity to implement GI/LID/Sustainable practices and how many incorporated the practices.

Program Flexibility Elements

- (viii) The permittee may use storm water educational materials locally developed or provided by the EPA (refer to <http://water.epa.gov/polwaste/npdes/swbmp/index.cfm>, <http://www.epa.gov/smartgrowth/parking.htm>, <http://www.epa.gov/smartgrowth/stormwater.htm>), the NMED, environmental, public interest or trade organizations, and/or other MS4s.
- (ix) The permittee may develop or update existing construction handbooks (e.g., the COA NPDES Stormwater Management Guidelines for Construction and Industrial Activities Handbook) to be consistent with promulgated construction and development effluent limitation guidelines.
- (x) The construction site inspections required in Part I.D.5.a.(iii) may be carried out in conjunction with the permittee's building code inspections using a screening prioritization process.

Table 2. Construction Site Stormwater Runoff Control - Program Development and Implementation Schedules

Activity	Permittee Class				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
Development of an ordinance or other regulatory mechanism as required in Part I.D.5.a.(ii)(a)	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Eighteen (18) months from effective date of the permit
Develop requirements and procedures as required in Part I.D.5.a.(ii)(b) through in Part I.D.5.a.(ii)(h)	Ten (10) months from effective date of permit	Thirteen (13) months from effective date of permit	Sixteen (16) months from effective date of permit	Sixteen (16) months from effective date of permit	Eighteen (18) months from effective date of permit
Annually conduct site inspections of 100 percent of all construction projects cumulatively disturbing one (1) or more acres as required in Part I.D.5.a.(iii)	Ten (10) months from effective date of permit	Start Thirteen (13) months from effective date of permit and annually thereafter	Start Sixteen (16) months from effective date of permit and annually thereafter	Start eighteen (18) months from effective date of permit and thereafter	Start two (2) years from effective date of permit and thereafter
Coordinate with all departments and boards with jurisdiction over the planning, review, permitting, or approval of public and private construction projects/activities within the permit area as required in Part I.D.5.a.(iv)	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	Twelve (12) months from effective date of permit	Twelve (12) months from effective date of permit	Fourteen (14) months from effective date of permit
Evaluation of GI/LID/Sustainable practices in site plan reviews as required in Part I.D.5.a.(v)	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	Twelve (12) months from effective date of permit	Twelve (12) months from effective date of permit	Fourteen (14) months from effective date of permit
Update the SWMP document and annual report as required in Part I.D.5.a.(vi) and in Part I.D.5.a.(vii)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary
Enhance the program to include program elements in Part I.D.5.a.(viii) through Part I.D.5.a.(x)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs.
(**) or MS4s designated by the Director

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

b. Post-Construction Stormwater Management in New Development and Redevelopment

(i) The permittee must develop, revise, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the MS4. The program must ensure that controls are in place that would prevent or minimize water quality impacts. **Permittees previously covered under NMS000101 or NMR040000 must continue existing programs, updating as necessary, to comply with the requirements of this permit.** (Note: Highway Departments and Flood Control Authorities may only apply the post-construction stormwater management program to the permittee's own construction projects)

(ii) The program must include the development, implementation, and enforcement of, at a minimum:

(a) Strategies which include a combination of structural and/or non-structural best management practices (BMPs) to control pollutants in stormwater runoff.

(b) An ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State, Tribal or local law. The ordinance or policy must:

Incorporate a stormwater quality design standard that manages on-site the 90th percentile storm event discharge volume associated with new development sites and 80th percentile storm event discharge volume associated with redevelopment sites, through stormwater controls that infiltrate, evapotranspire the discharge volume, except in instances where full compliance cannot be achieved, as provided in Part I.D.5.b.(v). The stormwater from rooftop discharge may be harvested and used on-site for non-commercial use. Any controls utilizing impoundments that are also used for flood control that are located in areas where the New Mexico Office of the State Engineer requirements at NMAC 19.26.2.15 (see also Section 72-5-32 NMSA) apply must drain within 96 hours unless the state engineer has issued a waiver to the owner of the impoundment.

Options to implement the site design standard include, but not limited to: management of the discharge volume achieved by canopy interception, soil amendments, rainfall harvesting, rain tanks and cisterns, engineered infiltration, extended filtration, dry swales, bioretention, roof top disconnections, permeable pavement, porous concrete, permeable pavers, reforestation, grass channels, green roofs and other appropriate techniques, and any combination of these practices, including implementation of other stormwater controls used to reduce pollutants in stormwater (e.g., a water quality facility).

Estimation of the 90th or 80th percentile storm event discharge volume is included in EPA Technical Report entitled "*Estimating Predevelopment Hydrology in the Middle Rio Grande Watershed, New Mexico, EPA Publication Number 832-R-14-007*". Permittees can also estimate:

Option A: a site specific 90th or 80th percentile storm event discharge volume using methodology specified in the referenced EPA Technical Report.

Option B: a site specific pre-development hydrology and associated storm event discharge volume using methodology specified in the referenced EPA technical Report.

(c) The permittee must ensure the appropriate implementation of the structural BMPs by considering some or all of the following: pre-construction review of BMP designs; inspections during construction to verify BMPs are built as designed; post-construction inspection and maintenance of BMPs; and penalty provisions for the noncompliance with preconstruction BMP design; failure to construct BMPs

- in accordance with the agreed upon pre-construction design; and ineffective post-construction operation and maintenance of BMPs;
- (d) The permittee must ensure that the post-construction program requirements are constantly reviewed and revised as appropriate to incorporate improvements in control techniques;
 - (e) Procedure to develop and implement an educational program for project developers regarding designs to control water quality effects from stormwater, and a training program for plan review staff regarding stormwater standards, site design techniques and controls, including training regarding GI/LID/Sustainability practices. Training may be developed independently or obtained from outside resources, i.e. federal, state, or local experts;
 - (f) Procedures for site inspection and enforcement to ensure proper long-term operation, maintenance, and repair of stormwater management practices that are put into place as part of construction projects/activities. Procedure(s) shall include the requirement that as-built plans be submitted within ninety (90) days of completion of construction projects/activities that include controls designed to manage the stormwater associated with the completed site (post-construction stormwater management). Procedure(s) may include the use of dedicated funds or escrow accounts for development projects or the adoption by the permittee of all privately owned control measures. This may also include the development of maintenance contracts between the owner of the control measure and the permittee. The maintenance contract shall include verification of maintenance practices by the owner, allows the MS4 owner/operator to inspect the maintenance practices, and perform maintenance if inspections indicate neglect by the owner;
 - (g) Procedures to control the discharge of pollutants related to commercial application and distribution of pesticides, herbicides, and fertilizers where permittee(s) hold jurisdiction over lands not directly owned by that entity (e.g., incorporated city). The procedures must ensure that herbicides and pesticides applicators doing business within the permittee's jurisdiction have been properly trained and certified, are encouraged to use the least toxic products, and control use and application rates according to the applicable requirements; and
 - (h) Procedure or system to review and update, as necessary, the existing program to ensure that stormwater controls or management practices for new development and redevelopment projects/activities continue to meet the requirements and objectives of the permit.
- (iii) The permittee must coordinate with all departments and boards with jurisdiction over the planning, review, permitting, or approval of public and private new development and redevelopment projects/activities within the permit area to ensure the hydrology associated with new development and redevelopment sites mimic to the extent practicable the pre-development hydrology of the previously undeveloped site, except in instances where the pre-development hydrology requirement conflicts with applicable water rights appropriation requirements. For purposes of this permit, pre-development hydrology shall be met by capturing the 90th percentile storm event runoff (consistent with any limitations on that capture) which under undeveloped natural conditions would be expected to infiltrate or evapotranspire on-site and result in little, if any, off-site runoff. (Note: This permit does not prevent permittees from requiring additional controls for flood control purposes.) Planning documents include, but are not limited to: comprehensive or master plans, subdivision ordinances, general land use plan, zoning code, transportation master plan, specific area plans, such as sector plan, site area plans, corridor plans, or unified development ordinances.
- (iv) The permittee must assess all existing codes, ordinances, planning documents and other applicable regulations, for impediments to the use of GI/LID/Sustainable practices. The assessment shall include a list of the identified impediments, necessary regulation changes, and recommendations and proposed schedules to incorporate policies and standards to relevant documents and procedures to maximize infiltration, recharge, water harvesting, habitat improvement, and hydrological management of stormwater runoff as allowed under the applicable water rights appropriation requirements. The permittee must develop a report of the assessment findings, which is to be used to provide information to the permittee, of the regulation changes necessary to remove impediments and allow implementation of these practices.

(v) Alternative Compliance for Infeasibility due to Site Constraints:

- (a) Infeasibility to manage the design standard volume specified in Part I(D)(5)(b)(ii)(b), or a portion of the design standard volume, onsite may result from site constraints including the following:
 - A. too small a lot outside of the building footprint to create the necessary infiltrative capacity even with amended soils;
 - B. soil instability as documented by a thorough geotechnical analysis;
 - C. a site use that is inconsistent with capture and reuse of storm water;
 - D. other physical conditions; or,
 - E. to comply with applicable requirements for on-site flood control structures leaves insufficient area to meet the standard.
- (b) A determination that it is infeasible to manage the design standard volume specified in Part I.D.5.b.(ii)(b), or a portion of the design standard volume, on site may not be based solely on the difficulty or cost of implementing onsite control measures, but must include multiple criteria that rule out an adequate combination of the practices set forth in Part I.D,5.b.(v).
- (c) This permit does not prevent imposition of more stringent requirements related to flood control. Where both the permittee's site design standard ordinance or policy and local flood control requirements on site cannot be met due to site conditions, the standard may be met through a combination of on-site and off-site controls.
- (d) Where applicable New Mexico water law limits the ability to fully manage the design standard volume on site, measures to minimize increased discharge consistent with requirements under New Mexico water law must still be implemented.
- (e) In instances where an alternative to compliance with the standard on site is chosen, technical justification as to the infeasibility of on-site management of the entire design standard volume, or a portion of the design standard volume, is required to be documented by submitting to the permittee a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect.
- (f) When a Permittee determines a project applicant has demonstrated infeasibility due to site constraints specified in Part I.D.5.b.(v) to manage the design standard volume specified in Part I.D.5.b.(ii).(b) or a portion of the design standard volume on-site, the Permittee shall require one of the following mitigation options:
 - A. *Off-site mitigation.* The off-site mitigation option only applies to redevelopment sites and cannot be applied to new development. Management of the standard volume, or a portion of the volume, may be implemented at another location within the MS4 area, approved by the permittee. The permittee shall identify priority areas within the MS4 in which mitigation projects can be completed. The permittee shall determine who will be responsible for long-term maintenance on off-site mitigation projects.
 - B. *Ground Water Replenishment Project:* Implementation of a project that has been determined to provide an opportunity to replenish regional ground water supplies at an offsite location.
 - C. *Payment in lieu.* Payment in lieu may be made to the permittee, who will apply the funds to a public stormwater project. MS4s shall maintain a publicly accessible database of approved projects for which these payments may be used.

- D. Other.* In a situation where alternative options A through C above are not feasible and the permittee wants to establish another alternative option for projects, the permittee may submit to the EPA for approval, the alternative option that meets the standard.
- (vi) The permittee must estimate the number of acres of impervious area (IA) and directly connected impervious area (DCIA). For the purpose of this part, IA includes conventional pavements, sidewalks, driveways, roadways, parking lots, and rooftops. DCIA is the portion of IA with a direct hydraulic connection to the permittee's MS4 or a waterbody via continuous paved surfaces, gutters, pipes, and other impervious features. DCIA typically does not include isolated impervious areas with an indirect hydraulic connection to the MS4 (e.g., swale or detention basin) or that otherwise drain to a pervious area.
- (vii) The permittee must develop an inventory and priority ranking of MS4-owned property and infrastructure (including public right-of-way) that may have the potential to be retrofitted with control measures designed to control the frequency, volume, and peak intensity of stormwater discharges to and from its MS4. In determining the potential for retrofitting, the permittee shall consider factors such as the complexity and cost of implementation, public safety, access for maintenance purposes, subsurface geology, depth to water table, proximity to aquifers and subsurface infrastructure including sanitary sewers and septic systems, and opportunities for public use and education under the applicable water right requirements and restrictions. In determining its priority ranking, the permittee shall consider factors such as schedules for planned capital improvements to storm and sanitary sewer infrastructure and paving projects; current storm sewer level of service and control of discharges to impaired waters, streams, and critical receiving water (drinking water supply sources);
- (viii) The permittee must incorporate watershed protection elements into relevant policy and/or planning documents as they come up for regular review. If a relevant planning document is not scheduled for review during the term of this permit, the permittee must identify the elements that cannot be implemented until that document is revised, and provide to EPA and NMED a schedule for incorporation and implementation not to exceed five years from the effective date of this permit. As applicable to each permittee's MS4 jurisdiction, policy and/or planning documents must include the following:
- (a) A description of master planning and project planning procedures to control the discharge of pollutants to and from the MS4.
 - (b) Minimize the amount of impervious surfaces (roads, parking lots, roofs, etc.) within each watershed, by controlling the unnecessary creation, extension and widening of impervious parking lots, roads and associated development. The permittee may evaluate the need to add impervious surface on a case-by-case basis and seek to identify alternatives that will meet the need without creating the impervious surface.
 - (c) Identify environmentally and ecologically sensitive areas that provide water quality benefits and serve critical watershed functions within the MS4 and ensure requirements to preserve, protect, create and/or restore these areas are developed and implemented during the plan and design phases of projects in these identified areas. These areas may include, but are not limited to critical watersheds, floodplains, and areas with endangered species concerns and historic properties. Stakeholders shall be consulted as appropriate.
 - (d) Implement stormwater management practices that minimize water quality impacts to streams, including disconnecting direct discharges to surface waters from impervious surfaces such as parking lots.
 - (e) Implement stormwater management practices that protect and enhance groundwater recharge as allowed under the applicable water rights laws.
 - (f) Seek to avoid or prevent hydromodification of streams and other water bodies caused by development, including roads, highways, and bridges.

- (g) Develop and implement policies to protect native soils, prevent topsoil stripping, and prevent compaction of soils.
- (h) The program must be specifically tailored to address local community needs (e.g. protection to drinking water sources, reduction of water quality impacts) and must be designed to attempt to maintain pre-development runoff conditions.
- (ix) The permittee must update the SWMP as necessary to include a description of the mechanism(s) utilized to comply with each of the elements required in Part I.D.5.b.(i) through Part I.D.5.b.(viii) as well as the citations and descriptions of design standards for structural and non-structural controls to control pollutants in stormwater runoff, including discussion of the methodology used during design for estimating impacts to water quality and selecting structural and non-structural controls. Description of measurable goals for each BMP (structural or non-structural) or each stormwater control must be included in the SWMP.
- (x) The permittee shall assess the overall success of the program, and document the program effectiveness in the annual report. The following information must be included in each annual report:
 - (a) Include a summary and analysis of all maintenance, inspections and enforcement, and the number and frequency of inspections performed annually.
 - (b) A cumulative listing of the annual modifications made to the Post-Construction Stormwater Management Program during the permit term, and a cumulative listing of annual revisions to administrative procedures made or ordinances enacted during the permit term.
 - (c) According to the schedule presented in the Program Development and Implementation Schedule in Table 3, the permittee must
 - A. Report the number of MS4-owned properties and infrastructure that have been retrofitted with control measures designed to control the frequency, volume, and peak intensity of stormwater discharges. The permittee may also include in its annual report non-MS4 owned property that has been retrofitted with control measures designed to control the frequency, volume, and peak intensity of stormwater discharges.
 - B. As required in Part I.D.5.b.(vi), report the tabulated results for IA and DCIA and its estimation methodology. In each subsequent annual report, the permittee shall estimate the number of acres of IA and DCIA that have been added or removed during the prior year. The permittee shall include in its estimates the additions and reductions resulting from development, redevelopment, or retrofit projects undertaken directly by the permittee; or by private developers and other parties in a voluntary manner or in compliance with the permittee's regulations.

Program Flexibility Elements:

- (xi) The permittee may use storm water educational materials locally developed or provided by EPA (refer to <http://water.epa.gov/polwaste/npdes/swbmp/index.cfm>, <http://www.epa.gov/smartgrowth/parking.htm>, and <http://www.epa.gov/smartgrowth/stormwater.htm>); the NMED; environmental, public interest or trade organizations; and/or other MS4s.
- (xii) When choosing appropriate BMPs, the permittee may participate in locally-based watershed planning efforts, which attempt to involve a diverse group of stakeholders including interested citizens. When developing a program that is consistent with this measure's intent, the permittee may adopt a planning process that identifies the municipality's program goals (e.g., minimize water quality impacts resulting from post-construction runoff from new development and redevelopment), implementation strategies (e.g., adopt a combination of structural and/or non-structural BMPs), operation and maintenance policies and procedures, and enforcement procedures.

(xiii) The permittee may incorporate the following elements in the Post-Construction Stormwater Management in New Development and Redevelopment program required in Part I.D.5.b.(ii)(b):

- (a) Provide requirements and standards to direct growth to identified areas to protect environmentally and ecologically sensitive areas such as floodplains and/or other areas with endangered species and historic properties concerns;
- (b) Include requirements to maintain and/or increase open space/buffers along sensitive water bodies, minimize impervious surfaces, and minimize disturbance of soils and vegetation; and
- (c) Encourage infill development in higher density urban areas, and areas with existing storm sewer infrastructure.

Table 3. Post-Construction Stormwater Management in New Development and Redevelopment - Program Development and Implementation Schedules

Activity	Permittee Class				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
Development of strategies as required in Part I.D.5.b.(ii).(a)	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	Twelve (12) months from effective date of permit	Twelve (12) months from effective date of permit	Fourteen (14) months from effective date of permit
Development of an ordinance or other regulatory mechanism as required in Part I.D.5.b.(ii).(b)	Twenty (24) months from effective date of permit	Thirty (30) months from effective date of permit	Thirty six (36) months from effective date of permit	Thirty six (36) months from effective date of permit	Thirty six (36) months from effective date of permit
Implementation and enforcement, via the ordinance or other regulatory mechanism, of site design standards as required in Part I.D.5.b.(ii).(b)	Within thirty six (36) months from effective date of the permit	Within forty two (42) months from the effective date of the permit	Within forty eight (48) months from effective date of the permit	Within forty eight (48) months from effective date of the permit	Within forty eight (48) months from effective date of the permit
Ensure appropriate implementation of structural controls as required in Part I.D.5.b.(ii).(c) and Part I.D.5.b.(ii).(d)	Ten (10) months from effective date of permit	One (1) year from effective date of permit	Two (2) years from effective date of permit	Two (2) years from effective date of permit	Thirty (30) months from effective date of permit
Develop procedures as required in Part I.D.5.b.(ii).(e), Part I.D.5.b.(ii).(f), Part I.D.5.b.(ii).(g), and Part I.D.5.b.(ii).(h)	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Eighteen (18) months from effective date of permit

Coordinate internally with all departments and boards with jurisdiction over the planning, review, permitting, or approval of public and private construction projects/activities within the permit area as required in Part I.D.5.b.(iii)	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	Eleven (11) months from effective date of permit	Eleven (11) months from effective date of permit	One (1) year from effective date of permit
As required in Part I.D.5.b.(iv), the permittee must assess all existing codes, ordinances, planning documents and other applicable regulations, for impediments to the use of GI/LID/Sustainable practices	Ten (10) months from effective date of permit	One (1) year from effective date of permit	Eighteen (18) months from effective date of permit	Eighteen (18) months from effective date of permit	Two (2) years from effective date of permit
As required in Part I.D.5.b.(iv), develop and submit a report of the assessment findings on GI/LID/Sustainable practices.	Eleven (11) months from effective date of permit	Eighteen (18) months from effective date of permit	Two (2) years from effective date of permit	Two (2) years from effective date of permit	Twenty seven (27) months from effective date of permit
Estimation of the number of acres of IA and DCIA as required in Part I.D.5.b.(vi)	Ten (10) months from effective date of permit	One (1) year from effective date of permit	Two (2) years from effective date of permit	Two (2) years from effective date of permit	Thirty (30) months from effective date of permit
Inventory and priority ranking as required in section in Part I.D.5.b.(vii)	Within fifteen (15) months from effective date of the permit	Within twenty four (24) months from effective date of the permit	Within thirty six (36) months from effective date of the permit	Within thirty six (36) months from effective date of the permit	Within forty two (42) months from effective date of the permit
Incorporate watershed protection elements as required in Part I.D.5.b.(viii)	Ten (10) months from effective date of permit	One (1) year from effective date of permit	Two (2) years from effective date of permit	Two (2) years from effective date of permit	Thirty (30) months from effective date of permit
Update the SWMP document and annual report as required in Part I.D.5.b.(ix) and Part I.D.5.b.(x).	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary
Enhance the program to include program elements in Part I.D.5.b.(xi) and Part I.D.5.b.(xii)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs.

(**) or MS4s designated by the Director

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

c. Pollution Prevention/Good Housekeeping for Municipal/Co-permittee Operations.

- (i) The permittee must develop, revise and implement an operation and maintenance program that includes a training component and the ultimate goal of preventing or reducing pollutant runoff from municipal operations. **Permittees previously covered under NMS000101 or NMR040000 must continue existing programs while updating those programs, as necessary, to comply with the requirements of this permit.** The program must include:
- (a) Development and implementation of an employee training program to incorporate pollution prevention and good housekeeping techniques into everyday operations and maintenance activities. The employee training program must be designed to prevent and reduce storm water pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance. The permittee must also develop a tracking procedure and ensure that employee turnover is considered when determining frequency of training;
 - (b) Maintenance activities, maintenance schedules, and long term inspections procedures for structural and non-structural storm water controls to reduce floatable, trash, and other pollutants discharged from the MS4.
 - (c) Controls for reducing or eliminating the discharge of pollutants from streets, roads, highways, municipal parking lots, maintenance and storage yards, fleet or maintenance shops with outdoor storage areas, salt/sand storage locations, snow disposal areas operated by the permittee, and waste transfer stations;
 - (d) Procedures for properly disposing of waste removed from the separate storm sewers and areas listed in Part I.D.5.c.(i).(c) (such as dredge spoil, accumulated sediments, floatables, and other debris); and
 - (e) Procedures to ensure that new flood management projects assess the impacts on water quality and examine existing projects for incorporating additional water quality protection devices or practices.

Note: The permittee may use training materials that are available from EPA, NMED, Tribe, or other organizations.

(ii) The Pollution Prevention/Good Housekeeping program must include the following elements:

- (a) Develop or update the existing list of all stormwater quality facilities by drainage basin, including location and description;
- (b) Develop or modify existing operational manual for de-icing activities addressing alternate materials and methods to control impacts to stormwater quality;
- (c) Develop or modify existing program to control pollution in stormwater runoff from equipment and vehicle maintenance yards and maintenance center operations located within the MS4;
- (d) Develop or modify existing street sweeping program. Assess possible benefits from changing frequency or timing of sweeping activities or utilizing different equipment for sweeping activities;
- (e) A description of procedures used by permittees to target roadway areas most likely to contribute pollutants to and from the MS4 (i.e., runoff discharges directly to sensitive receiving water, roadway receives majority of de-icing material, roadway receives excess litter, roadway receives greater loads of oil and grease);
- (f) Develop or revise existing standard operating procedures for collection of used motor vehicle fluids (at a minimum oil and antifreeze) and toxics (including paint, solvents, fertilizers, pesticides, herbicides,

- and other hazardous materials) used in permittee operations or discarded in the MS4, for recycle, reuse, or proper disposal;
- (g) Develop or revised existing standard operating procedures for the disposal of accumulated sediments, floatables, and other debris collected from the MS4 and during permittee operations to ensure proper disposal;
 - (h) Develop or revised existing litter source control programs to include public awareness campaigns targeting the permittee audience; and
 - (i) Develop or review and revise, as necessary, the criteria, procedures and schedule to evaluate existing flood control devices, structures and drainage ways to assess the potential of retrofitting to provide additional pollutant removal from stormwater. Implement routine review to ensure new and/or innovative practices are implemented where applicable.
 - (j) Enhance inspection and maintenance programs by coordinating with maintenance personnel to ensure that a target number of structures per basin are inspected and maintained per quarter;
 - (k) Enhance the existing program to control the discharge of floatables and trash from the MS4 by implementing source control of floatables in industrial and commercial areas;
 - (l) Include in each annual report, a cumulative summary of retrofit evaluations conducted during the permit term on existing flood control devices, structures and drainage ways to benefit water quality. Update the SWMP to include a schedule (with priorities) for identified retrofit projects;
 - (m) Flood management projects: review and revise, as necessary, technical criteria guidance documents and program for the assessment of water quality impacts and incorporation of water quality controls into future flood control projects. The criteria guidance document must include the following elements:
 - A. Describe how new flood control projects are assessed for water quality impacts.
 - B. Provide citations and descriptions of design standards that ensure water quality controls are incorporated in future flood control projects.
 - C. Include method for permittees to update standards with new and/or innovative practices.
 - D. Describe master planning and project planning procedures and design review procedures.
 - (n) Develop procedures to control the discharge of pollutants related to the storage and application of pesticides, herbicides, and fertilizers applied, by the permittee's employees or contractors, to public right-of-ways, parks, and other municipal property. The permittee must provide an updated description of the data monitoring system for all permittee departments utilizing pesticides, herbicides and fertilizers.
- (iii) Comply with the requirements included in the EPA Multi Sector General Permit (MSGP) to control runoff from industrial facilities (as defined in 40 CFR 122.26(b)(14)(i)-(ix) and (xi)) owned or operated by the permittees and ultimately discharge to the MS4. The permittees must develop or update:
- (a) A list of municipal/permittee operations impacted by this program,
 - (b) A map showing the industrial facilities owned and operated by the MS4,
 - (c) A list of the industrial facilities (other than large construction activities defined as industrial activity) that will be included in the industrial runoff control program by category and by basin. The list must include the permit authorization number or a MSGP NOI ID for each facility as applicable.

- (iv) The permittee must include in the SWMP a description of the mechanism(s) utilized to comply with each of the elements required in Part I.D.5.c.(i) throughout Part I.D.5.c.(iii) and its corresponding measurable goal.
- (v) The permittee shall assess the overall success of the program, and document the program effectiveness in the annual report.

Table 4. Pollution Prevention/Good Housekeeping for Municipal/Co-permittee Operations - Program Development and Implementation Schedules

Activity	Permittee Class				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
-Develop or update the Pollution Prevention/Good House Keeping program to include the elements in Part I.D.5.c.(i)	Ten (10) months from effective date of the permit	Twelve (12) months from effective date of the permit	Fourteen (14) months from effective date of the permit	Fourteen (14) months from effective date of the permit	Eighteen (18) months from effective date of the permit
-Enhance the program to include the elements in Part I.D.5.c.(ii)	Ten (10) months from effective date of the permit	One (1) year from effective date of the permit	Two (2) years from effective date of the permit	Two (2) years from effective date of the permit	Thirty (30) months from effective date of the permit
-Develop or update a list and a map of industrial facilities owned or operated by the permittee as required in Part I.D.5.c.(iii)	Ten (10) months from effective date of the permit	Eleven (11) months from effective date of the permit	One (1) year from effective date of the permit	One (1) year from effective date of the permit	Eighteen (18) months from effective date of the permit
Update the SWMP document and annual report as required in Part I.D.5.c.(iv) and Part I.D.5.c.(v)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs

(**) or MS4s designated by the Director

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

d. Industrial and High Risk Runoff (Applicable only to Class A permittees)

- (i) The permittee must control through ordinance, permit, contract, order or similar means, the contribution of pollutants to the municipal storm sewer by storm water discharges associated with industrial activity and the quality of storm water discharged from sites of industrial activity as defined in 40 CFR 122.26(b)(14)(i)-(ix) and (xi). If no such industrial activities are in a permittees jurisdiction, that permittee may certify that this program element does not apply.
- (ii) The permittee must continue implementation and enforcement of the Industrial and High Risk Runoff program, assess the overall success of the program, and document both direct and indirect measurements of program effectiveness in the annual report. The program shall include:
 - (a) A description of a program to identify, monitor, and control pollutants in stormwater discharges to the MS4 from municipal landfills; other treatment, storage, or disposal facilities for municipal waste (e.g. transfer stations, incinerators, etc.); hazardous waste treatment, storage, disposal and recovery facilities; facilities that are subject to EPCRA Title III, Section 313; and any other industrial or commercial discharge the permittee(s) determines are contributing a substantial pollutant loading to the

MS4. (Note: If no such facilities are in a permittees jurisdiction, that permittee may certify that this program element does not apply.); and

- (b) Priorities and procedures for inspections and establishing and implementing control measures for such discharges.
- (iii) Permittees must comply with the monitoring requirements specified in Part III.A.4;
- (iv) The permittee must modify the following as necessary:
 - (a) The list of the facilities included in the program, by category and basin;
 - (b) Schedules and frequency of inspection for listed facilities. Facility inspections may be carried out in conjunction with other municipal programs (e.g. pretreatment inspections of industrial users, health inspections, fire inspections, etc.), but must include random inspections for facilities not normally visited by the municipality;
 - (c) The priorities for inspections and procedures used during inspections (e.g. inspection checklist, review for NPDES permit coverage; review of stormwater pollution prevention plan; etc.); and
 - (d) Monitoring frequency, parameters and entity performing monitoring and analyses (MS4 permittees or subject facility). The monitoring program may include a waiver of monitoring for parameters at individual facilities based on a "no-exposure" certification;
- (v) The permittee must include in the SWMP a description of the mechanism(s) utilized to comply with each of the elements required in Part I.D.5.d.(i) throughout Part I.D.5.d.(iv) and its corresponding measurable goal.
- (vi) The permittee shall assess the overall success of the program, and document the program effectiveness in the annual report.

Program Flexibility Elements:

(vii) The permittee may:

- (a) Use analytical monitoring data, on a parameter-by-parameter basis, that a facility has collected to comply with or apply for a State or NPDES discharge permit (other than this permit), so as to avoid unnecessary cost and duplication of effort;
- (b) Allow the facility to test only one (1) outfall and to report that the quantitative data also apply to the substantially identical outfalls if:
 - A. A Type 1 or Type 2 industrial facility has two (2) or more outfalls with substantially identical effluents, and
 - B. Demonstration by the facility that the stormwater outfalls are substantially identical, using one (1) or all of the following methods for such demonstration. The NPDES Stormwater Sampling Guidance Document (EPA 833-B-92-001), available on EPA's website at www.epa.gov/npdes/guidance provides detailed guidance on each of the three options: (1) submission of a narrative description and a site map; (2) submission of matrices; or (3) submission of model matrices.
- (c) Accept a copy of a "no exposure" certification from a facility made to EPA under 40 CFR §122.26(g), in lieu of analytic monitoring.

Table 5: Industrial and High Risk Runoff - Program Development and Implementation Schedules:

Activity	Permittee Class	
	A Phase I MS4s	Cooperative (*) Any Permittee with cooperative programs
Ordinance (or other control method) as required in Part I.D.5.d.(i)	Ten (10) months from effective date of the permit	Twelve (12) months from effective date of the permit
Continue implementation and enforcement of the Industrial and High Risk Runoff program, assess the overall success of the program, and document both direct and indirect measurements of program effectiveness in the annual report as required in Part I.D.5.d.(ii)	Ten (10) months from effective date of the permit	Twelve (12) months from effective date of the permit
Meet the monitoring requirements in Part I.D.5.d.(iii)	Ten (10) months from effective date of the permit	Twelve (12) months from effective date of the permit
Include requirements in Part I.D.5.d.(iv)	Ten (10) months from permit effective date of the permit	Twelve (12) months from effective date of the permit
Update the SWMP document and annual report as required in Part I.D.5.d.(v) and Part I.D.5.d.(vi)	Update as necessary	Update as necessary
Enhance the program to include requirements in Part I.D.5.d.(vii)	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs.
Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

e. Illicit Discharges and Improper Disposal

- (i) The permittee shall develop, revise, implement, and enforce a program to detect and eliminate illicit discharges (as defined at 40 CFR 122.26(b)(2)) entering the MS4. **Permittees previously covered under NMS000101 or NMR040000 must continue existing programs while updating those programs, as necessary, to comply with the requirements of this permit.** The permittee must:
 - (a) Develop, if not already completed, a storm sewer system map, showing the names and locations of all outfalls as well as the names and locations of all waters of the United States that receive discharges from those outfalls. Identify all discharges points into major drainage channels draining more than twenty (20) percent of the MS4 area;
 - (b) To the extent allowable under State, Tribal or local law, effectively prohibit, through ordinance or other regulatory mechanism, non-stormwater discharges into the MS4, and implement appropriate enforcement procedures and actions;
 - (c) Develop and implement a plan to detect and address non-stormwater discharges, including illegal dumping, to the MS4. The permittee must include the following elements in the plan:
 - A. Procedures for locating priority areas likely to have illicit discharges including field test for selected pollutant indicators (ammonia, boron, chlorine, color, conductivity, detergents, *E. coli*, enterococci, total coliform, fluoride, hardness, pH, potassium, conductivity, surfactants), and visually screening outfalls during dry weather;

- B. Procedures for enforcement, including enforcement escalation procedures for recalcitrant or repeat offenders;
 - C. Procedures for removing the source of the discharge;
 - D. Procedures for program evaluation and assessment; and
 - E. Procedures for coordination with adjacent municipalities and/or state, tribal, or federal regulatory agencies to address situations where investigations indicate the illicit discharge originates outside the MS4 jurisdiction.
- (d) Develop an education program to promote, publicize, and facilitate public reporting of illicit connections or discharges, and distribution of outreach materials. The permittee shall inform public employees, businesses and the general public of hazards associated with illegal discharges and improper disposal of waste.
 - (e) Establish a hotline to address complaints from the public.
 - (f) Investigate suspected significant/severe illicit discharges within forty-eight (48) hours of detection and all other discharges as soon as practicable; elimination of such discharges as expeditiously as possible; and, requirement of immediate cessation of illicit discharges upon confirmation of responsible parties.
 - (g) Review complaint records for the last permit term and develop a targeted source reduction program for those illicit discharge/improper disposal incidents that have occurred more than twice in two (2) or more years from different locations. (Applicable only to class A and B permittees)
 - (h) If applicable, implement the program using the priority ranking develop during last permit term
- (ii) The permittee shall address the following categories of non-stormwater discharges or flows (e.g., illicit discharges) only if they are identified as significant contributors of pollutants to the MS4: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(90)), uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, and street wash water.

Note: Discharges or flows from fire fighting activities are excluded from the effective prohibitions against non-stormwater and need only be addressed where they are identified a significant sources of pollutants to water of the United States).
- (iii) The permittee must screen the entire jurisdiction at least once every five (5) years and high priority areas at least once every year. High priority areas include any area where there is ongoing evidence of illicit discharges or dumping, or where there are citizen complaints on more than five (5) separate events within twelve (12) months. The permittee must:
 - (a) Include in its SWMP document a description of the means, methods, quality assurance and controls protocols, and schedule for successfully implementing the required screening, field monitoring, laboratory analysis, investigations, and analysis evaluation of data collected.
 - (b) Comply with the dry weather screening program established in Table 6 and the monitoring requirements specified in Part III.A.2.
 - (c) If applicable, implement the priority ranking system develop in previous permit term.

- (iv) **Waste Collection Programs:** The permittee must develop, update, and implement programs to collect used motor vehicle fluids (at a minimum, oil and antifreeze) for recycle, reuse, or proper disposal, and to collect household hazardous waste materials (including paint, solvents, fertilizers, pesticides, herbicides, and other hazardous materials) for recycle, reuse, or proper disposal. Where available, collection programs operated by third parties may be a component of the programs. Permittees shall enhance these programs by establishing the following elements as a goal in the SWMP:
- A. Increasing the frequency of the collection days hosted;
 - B. Expanding the program to include commercial fats, oils and greases; and
 - C. Coordinating program efforts between applicable permittee departments.
- (v) **Spill Prevention and Response.** The permittee must develop, update and implement a program to prevent, contain, and respond to spills that may discharge into the MS4. The permittees must continue existing programs while updating those programs, as necessary, to comply with the requirements of this permit. The Spill Prevention and Response program shall include:
- (a) Where discharge of material resulting from a spill is necessary to prevent loss of life, personal injury, or severe property damage, the permittee(s) shall take, or insure the party responsible for the spill takes, all reasonable steps to control or prevent any adverse effects to human health or the environment: and
 - (b) The spill response program may include a combination of spill response actions by the permittee (and/or another public or private entity), and legal requirements for private entities within the permittee's municipal jurisdiction.
- (vi) The permittee must include in the SWMP a description of the mechanism(s) utilized to comply with each of the elements required in Part I.D.5.e.(i) throughout Part I.D.5.e.(v) and its corresponding measurable goal. A description of the means, methods, quality assurance and controls protocols, and schedule for successfully implementing the required screening, field monitoring, laboratory analysis, investigations, and analysis evaluation of data collected
- (vii) The permittee shall assess the overall success of the program, and document the program effectiveness in the annual report.
- (viii) The permittee must expeditiously revise as necessary, within nine (9) months from the effective date of the permit, the existing permitting/certification program to ensure that any entity applying for the use of Right of Way implements controls in their construction and maintenance procedures to control pollutants entering the MS4. (Only applicable to NMDOT)

Program Flexibility Elements

- (ix) The permittee may:
- (a) Divide the jurisdiction into assessment areas where monitoring at fewer locations would still provide sufficient information to determine the presence or absence of illicit discharges within the larger area;
 - (b) Downgrade high priority areas after the area has been screened at least once and there are citizen complaints on no more than five (5) separate events within a twelve (12) month period;
 - (c) Rely on a cooperative program with other MS4s for detection and elimination of illicit discharges and illegal dumping;

- (d) If participating in a cooperative program with other MS4s, required detection program frequencies may be based on the combined jurisdictional area rather than individual jurisdictional areas and may use assessment areas crossing jurisdictional boundaries to reduce total number of screening locations (e.g., a shared single screening location that would provide information on more than one jurisdiction); and
- (e) After screening a non-high priority area once, adopt an "in response to complaints only" IDDE for that area provided there are citizen complaints on no more than two (2) separate events within a twelve (12) month period.
- (f) Enhance the program to utilize procedures and methodologies consistent with those described in "Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments."

Table 6. Illicit Discharges and Improper Disposal - Program Development and Implementation Schedules

Activity	Permittee Class				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census ***)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
Mapping as required in Part I.D.5.e.(i)(a)	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	Eleven (11) months from effective date of permit	Eleven (11) months from effective date of permit	Fourteen (14) months from effective date of permit
Ordinance (or other control method) as required in Part I.D.5.e.(i)(b)	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	Two (2) years from effective date of permit	Two (2) years from effective date of permit	Thirty (30) months from effective date of permit
Develop and implement a IDDE plan as required in Part I.D.5.e.(i)(c)	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	Two (2) years from effective date of permit	Two (2) years from effective date of permit	Thirty (30) months from effective date of permit
Develop an education program as required in Part I.D.5.e.(i)(d)	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Eighteen (18) months from effective date of permit
Establish a hotline as required in Part I.D.5.e.(i)(e)	Update as necessary	Ten (10) months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Eighteen (18) months from effective date of permit
Investigate suspected significant/severe illicit discharges as required in Part I.D.5.e.(i)(f)	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Eighteen (18) months from effective date of permit
Review complaint records and develop a targeted source reduction program as required in Part I.D.5.e.(i)(g)	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	N/A	N/A	One (1) year from effective date of permit

Screening of system as required in Part I.D.5.e.(iii) as follows:	1 / year	1 / year	1 / year	1 / year	1 / year
a.) High priority areas**					
b.) Whole system	-Screen 20% of the MS4 per year	- Screen 20% of the MS4 per year	-Years 1 – 2: develop procedures as required in Part I.D.5.e.(i)(c) -Year 3: screen 30% of the MS4 -Year 4: screen 20% of the MS4 -Year 5: screen 50% of the MS4	-Years 1 – 2: develop procedures as required Part I.D.5.e.(i)(c) -Year 3: screen 30% of the MS4 -Year 4: screen 20% of the MS4 -Year 5: screen 50% of the MS4	-Years 1 – 3: develop procedures as require in Part I.D.5.e.(i)(c) -Year 4: screen 30% of the MS4 -Year 5: screen 70% of the MS4
Develop, update, and implement a Waste Collection Program as required in Part I.D.5.e.(iv)	Ten (10) months from effective date of permit	Eighteen (18) months from effective date of permit	Two (2) years from effective date of permit	Two (2) years from effective date of permit	Thirty (30) months from effective date of permit
Develop, update and implement a Spill Prevention and Response program to prevent, contain, and respond to spills that may discharge into the MS4 as required in Part I.D.5.e.(v)	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	One (1) year from effective date of permit	One (1) year from effective date of permit	Eighteen (18) months from effective date of permit
Update the SWMP document and annual report as required in Part I.D.5.e.(iii), Part I.D.5.e.(vi), and Part I.D.5.e.(vii).	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary
Enhance the program to include requirements in Part I.D.5.e.(ix)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs.

(**) High priority areas include any area where there is ongoing evidence of illicit discharges or dumping, or where there are citizen complaints on more than five (5) separate events within twelve (12) months

(***) or MS4s designated by the Director

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

f. Control of Floatables Discharges

- (i) The permittee must develop, update, and implement a program to address and control floatables in discharges into the MS4. The floatables control program shall include source controls and, where necessary, structural controls. **Permittees previously covered under NMS000101 or NMR040000 must continue existing programs while updating those programs, as necessary, to comply with the requirements of this permit.** The following elements must be included in the program:

- (a) Develop a schedule for implementation of the program to control floatables in discharges into the MS4 (Note: AMAFCA and the City of Albuquerque should update the schedule according to the findings of the 2005 AMAFCA/COA Floatable and Gross Pollutant Study and other studies); and
 - (b) Estimate the annual volume of floatables and trash removed from each control facility and characterize the floatable type.
- (ii) The permittee must include in the SWMP a description of the mechanism(s) utilized to comply with each of the elements required in Part I.D.5.f.(i).
- (iii) The permittee shall assess the overall success of the program, and document the program effectiveness in the annual report.

Table 7. Control of Floatables Discharges - Program Development and Implementation Schedules

Activity	Permittee Class				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
- Develop a schedule to implement the program as required in Part I.D.5.f.(i)(a)	Ten (10) months from the effective date of the permit	Ten (10) months from the effective date of the permit	One (1) year from the effective date of the permit	One (1) year from the effective date of the permit	Eighteen (18) months from the effective date of the permit
-Estimate the annual volume of floatables and trash removed from each control facility and characterize the floatable type as required in Part I.D.5.f.(i)(b)	Ten (10) months from the effective date of the permit	One (1) year from the effective date of the permit	Two (2) years from the effective date of the permit	Two (2) years from the effective date of the permit	Thirty (30) months from the effective date of the permit
Update the SWMP document and annual report as required in Part I.D.5.f.(ii) and Part I.D.5.f.(iii).	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs.

(**) or MS4s designated by the Director

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

g. Public Education and Outreach on Stormwater Impacts

- (i) The permittee shall, individually or cooperatively, develop, revise, implement, and maintain a comprehensive stormwater program to educate the community, employees, businesses, and the general public of hazards associated with the illegal discharges and improper disposal of waste and about the impact that stormwater discharges on local waterways, as well as the steps that the public can take to reduce pollutants in stormwater. **Permittees previously covered under NMS000101 and NMR040000 must continue existing programs while updating those programs, as necessary, to comply with the requirements of this permit.**
- (ii) The permittee must implement a public education program to distribute educational knowledge to the community or conduct equivalent outreach activities about the impacts of storm water discharges on water bodies and the steps that the public can take to reduce pollutants in storm water runoff. The permittee must:

- (a) Define the goals and objectives of the program based on high priority community-wide issues;
 - (b) Develop or utilize appropriate educational materials, such as printed materials, billboard and mass transit advertisements, signage at select locations, radio advertisements, television advertisements, and websites;
 - (c) Inform individuals and households about ensuring proper septic system maintenance, ensuring the proper use and disposal of landscape and garden chemicals including fertilizers and pesticides, protecting and restoring riparian vegetation, and properly disposing of used motor oil or household hazardous wastes;
 - (d) Inform individuals and groups how to become involved in local stream and beach restoration activities as well as activities that are coordinated by youth service and conservation corps or other citizen groups;
 - (e) Use tailored public education program, using a mix of locally appropriate strategies, to target specific audiences and communities. Examples of strategies include distributing brochures or fact sheets, sponsoring speaking engagements before community groups, providing public service announcements, implementing educational programs targeted at school age children, and conducting community-based projects such as storm drain stenciling, and watershed cleanups; and
 - (f) Use materials or outreach programs directed toward targeted groups of commercial, industrial, and institutional entities likely to have significant stormwater impacts. For example, providing information to restaurants on the impact of grease clogging storm drains and to garages on the impact of oil discharges. The permittee may tailor the outreach program to address the viewpoints and concerns of all communities, particularly minority and disadvantaged communities, as well as any special concerns relating to children. The permittee must make information available for non-English speaking residents, where appropriate.
- (iii) The permittee must include the following information in the Stormwater Management Program (SWMP) document:
- (a) A description of a program to promote, publicize, facilitate public reporting of the presence of illicit discharges or water quality associated with discharges from municipal separate storm sewers;
 - (b) A description of the education activities, public information activities, and other appropriate activities to facilitate the proper management and disposal of used oil and toxic materials; and
 - (c) A description of the mechanism(s) utilized to comply with each of the elements required in Part I.D.5.g.(i) and Part I.D.5.g.(ii) and its corresponding measurable goal.
- (iv) The permittee must assess the overall success of the program, and document both direct and indirect measurements of program effectiveness in the Annual Report.

Program Flexibility Elements

- (v) Where necessary to comply with the Minimum Control Measures established in Part I.D.5.g.(i) and Part I.D.5.g.(ii), the permittee should develop a program or modify/revise an existing education and outreach program to:
 - (a) Promote, publicize, and facilitate the use of Green Infrastructure (GI)/Low Impact Development (LID)/Sustainability practices; and
 - (b) Include an integrated public education program (including all permittee departments and programs within the MS4) regarding litter reduction, reduction in pesticide/herbicide use, recycling and proper

disposal (including yard waste, hazardous waste materials, and used motor vehicle fluids), and GI/LID/Sustainable practices (including xeriscaping, reduced water consumption, water harvesting practices allowed by the New Mexico State Engineer Office).

- (vi) The permittee may collaborate or partner with other MS4 operators to maximize the program and cost effectiveness of the required outreach.
- (vii) The education and outreach program may use citizen hotlines as a low-cost strategy to engage the public in illicit discharge surveillance.
- (viii) The permittee may use stormwater educational materials provided by the State, Tribe, EPA, environmental, public interest or trade organizations, or other MS4s. The permittee may also integrate the education and outreach program with existing education and outreach programs in the Middle Rio Grande area. Example of existing programs include:
 - (a) Classroom education on stormwater;
 - A. Develop watershed map to help students visualize area impacted.
 - B. Develop pet-specific education
 - (b) Establish a water committee/advisor group;
 - (c) Contribute and participate in Stormwater Quality Team;
 - (d) Education/outreach for commercial activities;
 - (e) Hold regular employee trainings with industry groups
 - (f) Education of lawn and garden activities;
 - (g) Education on sustainable practices;
 - (h) Education/outreach of pet waste management;
 - (i) Education on the proper disposal of household hazardous waste;
 - (j) Education/outreach programs aimed at minority and disadvantaged communities and children;
 - (k) Education/outreach of trash management;
 - (l) Education/outreach in public events;
 - A. Participate in local events—brochures, posters, etc.
 - B. Participate in regional events (i.e., State Fair, Balloon Fiesta).
 - (m) Education/outreach using the media (e.g. publish local newsletters);
 - (n) Education/outreach on water conservation practices designed to reduce pollutants in storm water for home residences.

Table 8. Public Education and Outreach on Stormwater Impacts - Program Development and Implementation Schedules

Activity	Permittee Class				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
Develop, revise, implement, and maintain an education and outreach program as required in Part I.D.5.g.(i) and Part I.D.5.g.(ii)	Ten (10) months from the effective date of the permit	Eleven (11) months from the effective date of the permit	Twelve (12) months from effective date of the permit	Twelve (12) months from effective date of the permit	Fourteen (14) months from effective date of the permit
Update the SWMP document and annual report as required in Part I.D.5.g.(iii) and Part I.D.5.g.(iv)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary
Enhance the program to include requirements in Part I.D.5.g.(v) through Part I.D.5.g.(viii)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs.

(**) or MS4s designated by the Director

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

h. Public Involvement and Participation

- (i) The permittee must provide local public notice of and make available for public review a copy of the complete NOI and attachments (see Part I.B.2). Local public notice may be made by newspaper notice, notice at a council meeting, posting on the internet, or other method consistent with state/tribal/local public notice requirements.

The permittee must consider all public comments received during the public notice period and modify the NOI, or include a schedule to modify the SWMP, as necessary, or as required by the Director modify the NOI or/and SWMP in response to such comments. The Permittees must include in the NOI any unresolved public comments and the MS4's response to these comments. Responses provided by the MS4 will be considered as part of EPA's decision-making process. See also Appendix E Providing Comments or Requesting a Public Hearing on an Operator's NOI.

- (ii) The permittee shall develop, revise, implement and maintain a plan to encourage public involvement and provide opportunities for participation in the review, modification and implementation of the SWMP; develop and implement a process by which public comments to the plan are received and reviewed by the person(s) responsible for the SWMP; and, make the SWMP available to the public and to the operator of any MS4 or Tribal authority receiving discharges from the MS4. **Permittee previously covered under NMS000101 or NMR040000 must continue existing public involvement and participation programs while updating those programs, as necessary, to comply with the requirements of this permit.**

- (iii) The plan required in Part I.D.5.h.(ii) shall include a comprehensive planning process which involves public participation and where necessary intergovernmental coordination, to reduce the discharge of pollutants to the maximum extent practicable using management practices, control techniques and system, design and engineering methods, and such other provisions which are appropriate. The permittee must include the following elements in the plan:
- (a) A detailed description of the general plan for informing the public of involvement and participation opportunities, including types of activities; target audiences; how interested parties may access the SWMP; and how the public was involved in development of the SWMP;
 - (b) The development and implementation of at least one (1) assessment of public behavioral change following a public education and/or participation event;
 - (c) A process to solicit involvement by environmental groups, environmental justice communities, civic organizations or other neighborhoods/organizations interested in water quality-related issues, including but not limited to the Middle Rio Grande Water Quality Work Group, the Middle Rio Grande Bosque Initiative, the Middle Rio Grande Endangered Species Act Collaborative Program, the Middle Rio Grande-Albuquerque Reach Watershed Group, the Pueblos of Santa Ana, Sandia and Isleta, Albuquerque Bernalillo County Water Utility Authority, UNM Colleges and Schools, and Chartered Student Organizations; and
 - (d) An evaluation of opportunities to utilize volunteers for stormwater pollution prevention activities and awareness throughout the area.
- (iv) The permittee shall comply with State, Tribal and local public notice requirements when implementing a public involvement/ participation program.
- (v) The public participation process must reach out to all economic and ethnic groups. Opportunities for members of the public to participate in program development and implementation include serving as citizen representatives on a local stormwater management panel, attending public hearings, working as citizen volunteers to educate other individuals about the program, assisting in program coordination with other pre-existing programs, or participating in volunteer monitoring efforts.
- (vi) The permittee must include in the SWMP a description of the mechanism(s) utilized to comply with each of the elements required in Parts I.D.5.h.(i) throughout Part I.D.5.h.(iv) and its corresponding measurable goal.
- (vii) The permittee shall assess the overall success of the program, and document the program effectiveness in the annual report.
- (viii) The permittee must provide public accessibility of the Storm Water Management Program (SWMP) document and Annual Reports online via the Internet and during normal business hours at the MS4 operator's main office, a local library, posting on the internet and/or other readily accessible location for public inspection and copying consistent with any applicable federal, state, tribal, or local open records requirements. Upon a showing of significant public interest, the MS4 operator is encouraged to hold a public meeting (or include in the agenda of in a regularly scheduled city council meeting, etc.) on the NOI, SWMP, and Annual Reports. (See Part III B)

Program Flexibility Elements

- (ix) The permittee may integrate the public Involvement and participation program with existing education and outreach programs in the Middle Rio Grande area. Example of existing programs include: Adopt-A-Stream Programs; Attitude Surveys; Community Hotlines (e.g. establishment of a "311"-type number and system established to handle storm-water-related concerns, setting up a public tracking/reporting

system, using phones and social media); Revegetation Programs; Storm Drain Stenciling Programs; Stream cleanup and Monitoring program/events.

Table 9. Public Involvement and Participation - *Program Development and Implementation Schedules*

Activity	Permittee Class				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
Develop (or update), implement, and maintain a public involvement and participation plan as required in Part I.D.5.h.(ii) and Part I.D.5.h.(iii)	Ten (10) months from effective date of the permit	Ten (10) months from effective date of the permit	Eleven (11) months from effective date of the permit	Eleven (11) months from effective date of the permit	One (1) year from effective date of the permit
Comply with State, Tribal, and local notice requirements when implementing a Public Involvement and Participation Program as required in Part I.D.5.h.(iv)	Ten (10) months from effective date of the permit	Eleven (11) months from effective date of the permit	Twelve (12) months from effective date of the permit	Twelve (12) months from effective date of the permit	Fourteen (14) months from effective date of the permit
Include elements as required in Part I.D.5.h.(v)	Ten (10) months from effective date of the permit	Eleven (11) months from effective date of the permit	One (1) year from effective date of the permit	One (1) year from effective date of the permit	Eighteen (18) months from effective date of the permit
Update the SWMP document and annual report as required in Part I.D.5.h.(vi), Part I.D.5.h.(vii), and Part I.D.5.h.(viii)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary
Enhance the program to include requirements in Part I.D.5.h.(ix)	Update as necessary	Update as necessary	Update as necessary	Update as necessary	Update as necessary

(*) During development of cooperative programs, the permittee must continue to implement existing programs.

(**) or MS4s designated by the Director

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

6. Stormwater Management Program Review and Modification.

- a. Program Review. Permittee shall participate in an annual review of its SWMP in conjunction with preparation of the annual report required in Part III.B. Results of the review shall be discussed in the annual report and shall include an assessment of:
 - (i) SWMP implementation, progress in achieving measurable goals, and compliance with program elements and other permit conditions;
 - (ii) the effectiveness of its SWMP, and any necessary modifications, in complying with the permit, including requirements to control the discharge of pollutants, and comply with water quality standards and any applicable approved TMDLs; and the adequacy of staff, funding levels, equipment, and support capabilities to fully implement the SWMP and comply with permit conditions.

- (a) Project staffing requirements, in man hours, for the implementation of the MS4 program during the upcoming year.
 - (b) Staff man hours used during the previous year for implementing the MS4 program. Man hours may be estimated based on staff assigned, assuming a forty (40) hour work week.
- b. Program Modification. The permittee(s) may modify its SWMP with prior notification or request to the EPA and NMED in accordance with this section.
 - (i) Modifications adding, but not eliminating, replacing, or jeopardizing fulfillment of any components, controls, or requirements of its SWMP may be made by the permittee(s) at any time upon written notification to the EPA.
 - (ii) Modifications replacing or eliminating an ineffective or unfeasible component, control or requirement of its SWMP, including monitoring and analysis requirements described in Parts III.A and V, may be requested in writing at any time. If request is denied, the EPA will send a written explanation of the decision. Modification requests shall include the following:
 - (a) a description of why the SWMP component is ineffective, unfeasible (including cost prohibitions), or unnecessary to support compliance with the permit;
 - (b) expectations on the effectiveness of the proposed replacement component; and
 - (c) an analysis of how the proposed replacement component is expected to achieve the goals of the component to be replaced.
 - (iii) Modifications resulting from schedules contained in Part VI may be requested following completion of an interim task or final deadline.
 - (iv) Modification requests or notifications shall be made in writing, signed in accordance with Part IV.H.
- c. Program Modifications Required by EPA. Modifications requested by EPA shall be made in writing, set forth the time schedule for the permittee(s) to develop the modifications, and offer the permittee(s) the opportunity to propose alternative program modifications to meet the objective of the requested modification. The EPA may require changes to the SWMP as needed to:
 - (i) Address impacts on receiving water quality caused, or contributed to, by discharges from the MS4;
 - (ii) Include more stringent requirements necessary to comply with new State or Federal statutory or regulatory requirements;
 - (iii) Include such other conditions deemed necessary by the EPA to comply with the goals and requirements of the Clean Water Act; or
 - (iv) If, at any time, EPA determines that the SWMP does not meet permit requirements.
- d. Transfer of Ownership, Operational Authority, or Responsibility for SWMP Implementation: The permittee(s) shall implement the SWMP:
 - (i) On all new areas added to their portion of the MS4 (or for which they become responsible for implementation of stormwater quality controls) as expeditiously as possible, but not later than one (1) year from addition of the new areas. Implementation may be accomplished in a phased manner to allow additional time for controls that cannot be implemented immediately;

- (ii) Within ninety (90) days of a transfer of ownership, operational authority, or responsibility for SWMP implementation, the permittee(s) shall have a plan for implementing the SWMP on all affected areas. The plan may include schedules for implementation; and information on all new annexed areas and any resulting updates required to the SWMP shall be submitted in the annual report.
7. **Retention of Program Records.** The permittee shall retain SWMP records developed in accordance with Part I.D, Part IV.P, and Part VI for at least five (5) years after coverage under this permit terminates.
 8. **Qualifying State, Tribal or Local Program.** The permittee may substitute the BMPs and measurable goals of an existing storm water pollution control program to qualify for compliance with one or more of the minimum control measures if the existing measure meets the requirements of the minimum control measure as established in Part I.D.5

PART II. NUMERIC DISCHARGE LIMITATIONS

A. DISCHARGE LIMITATIONS. Reserved

PART III. MONITORING, ASSESSMENT, AND REPORTING REQUIREMENTS:

A. MONITORING AND ASSESSMENT

The permittee must develop, in consultation with NMED and EPA (and affected Tribes if monitoring locations would be located on Tribal lands), and implement a comprehensive monitoring and assessment program designed to meet the following objectives:

- Assess compliance with this permit;
- Assess the effectiveness of the permittee's stormwater management program;
- Assess the impacts to receiving waters resulting from stormwater discharges;
- Characterize stormwater discharges;
- Identify sources of elevated pollutant loads and specific pollutants;
- Detect and eliminate illicit discharges and illegal connections to the MS4; and
- Assess the overall health and evaluate long-term trends in receiving water quality.

The permittee shall select specific monitoring locations sufficient to assess effects of storm water discharges on receiving waters. The monitoring program may take advantage of monitoring stations/efforts utilized by the permittees or others in previous stormwater monitoring programs or other water quality monitoring efforts. Data collected by others at such stations may be used to satisfy part, or all, of the permit monitoring requirements provided the data collection by that party meets the requirements established in Part III.A.1 throughout Part III.A.5. The comprehensive monitoring and assessment program shall be described in the SWMP document and the results must be provided in each annual report.

Implementation of the comprehensive monitoring and assessment program may be achieved through participation with other permittees to satisfy the requirements of Part III.A.1 throughout Part III.A.5 below in lieu of creating duplicate program elements for each individual permittee.

1. **Wet Weather Monitoring:** The permittees shall conduct wet weather monitoring to gather information on the response of receiving waters to wet weather discharges from the MS4 during both wet season (July 1 through October 31) and dry Season (November 1 through June 30). Wet Weather Monitoring shall be conducted at outfalls, internal sampling stations, and/or in-stream monitoring locations at each water of the US that runs in each entity or entities' jurisdiction(s). Permittees may choose either Option A or Option B below:
 - a. *Option A:* Individual monitoring
 - (i) Class A: Perform wet weather monitoring at a location coming into the MS4 jurisdictional area (upstream) and leaving the MS4 jurisdictional area (downstream), see Appendix D. Monitor for TSS, TDS, COD, BODs, DO, oil and grease, *E.coli*, pH, total kjeldahl nitrogen, nitrate plus nitrite, dissolved phosphorus, total ammonia plus organic nitrogen, total phosphorus, PCBs and gross alpha. Monitoring of temperature shall be also conducted at outfalls and/or Rio Grande monitoring locations. Phase I permittees must include additional parameters from monitoring conducted under permit NMS000101 (from last 10 years) whose mean values are at or above a WQS. Permittee must sample these pollutants a minimum of 10 events during the permit term with at least 5 events in wet season and 4 events in dry season.
 - (ii) Class B, C, and D: Perform wet weather monitoring at a location coming into the MS4 jurisdictional area (upstream) and leaving the MS4 jurisdictional area (downstream), see Appendix D. Monitor for TSS, TDS, COD, BODs, DO, oil and grease, *E.coli*, pH, total kjeldahl nitrogen, nitrate plus nitrite, dissolved phosphorus, total ammonia plus organic nitrogen, total phosphorus, PCBs and gross alpha. Monitoring of temperature shall be also

conducted at outfalls and/or Rio Grande monitoring locations. If applicable, include additional parameters from monitoring conducted under permits NMR040000 or/and NMR040001 whose mean values are at or above a WQS; sample these pollutants a minimum of 8 events per location during the permit term with at least 4 events in wet season and 2 events in dry season.

b. *Option B: Cooperative Monitoring Program*

Develop a cooperative wet weather monitoring program with other permittees in the Middle Rio Grande watershed (see map in Appendix A). The program will monitor waters coming into the watershed (upstream) and leaving the watershed (downstream), see suggested sampling locations in Appendix D. The program must include sampling for TSS, TDS, COD, BOD5, DO, oil and grease, *E. coli*, pH, total kjeldahl nitrogen, nitrate plus nitrite, dissolved phosphorus, total ammonia plus organic nitrogen, total phosphorus, PCBs and Gross alpha. Monitoring of temperature shall be also conducted at outfalls and/or Rio Grande monitoring locations. Permittees must include additional parameters from monitoring conducted under permits NMS000101, NMR040000 or/and NMR040001 whose mean values are at or above a WQS. The monitoring program must sample the pollutants for a minimum of 7 storm events per location during the permit term with at least 3 events wet season and 2 events in dry season.

Note: Seasonal monitoring periods are: Wet Season: July 1 through October 31; Dry Season: November 1 through June 30.

- c. Wet weather monitoring shall be performed only when the predicted (or actual) rainfall magnitude of a storm event is greater than 0.25 inches and an antecedent dry period of at least forty-eight (48) hours after a rain event greater than 0.1 inch in magnitude is satisfied. Monitoring methodology will consist of collecting a minimum of four (4) grab samples spaced at a minimum interval of fifteen (15) minutes each (or a flow weighted automatic composite, see Part III.A.5.a.(i)). Individual grab samples shall be preserved and delivered to the laboratory where samples will be combined into a single composite sample from each monitoring location.
- d. Monitoring methodology at each MS4 monitoring location shall be collected during any portion of the monitoring location's discharge hydrograph (i.e. first flush, rising limb, peak, and falling limb) after a discernible increase in flow at the tributary inlet.
- e. The permittee must comply with the schedules contained in Table 10. The results of the Wet Weather Monitoring must be provided in each annual report.
- f. DO, pH, conductivity, and temperature shall be analyzed in the field within fifteen (15) minutes of sample collection.
- g. Alternate wet weather monitoring locations established in Part III.A.1.a or Part III.A.1.b may be substituted for just cause during the term of the permit. Requests for approval of alternate monitoring locations shall be made to the EPA and NMED in writing and include the rationale for the requested monitoring station relocation. Unless disapproved by the EPA, use of an alternate monitoring location (except for those with numeric effluent limitations) may commence thirty (30) days from the date of the request. For monitoring locations where numeric effluent limitations have been established, the permit must be modified prior to substitution of alternate monitoring locations. At least six (6) samples shall be collected during the first year of monitoring at substitute monitoring locations. If there are less than six sampleable events, this should be document for reporting purposes.

- h. Response to monitoring results: The monitoring program must include a contingency plan for collecting additional monitoring data within the MS4 or at additional appropriate instream locations should monitoring results indicate that MS4 discharges may be contributing to instream exceedances of WQS. The purpose of this additional monitoring effort would be to identify sources of elevated pollutant loadings so they could be addressed by the SWMP.

Table 10. Wet Weather Monitoring Program Implementation Schedules:

Activity	Permittee Class				
	A Phase I MS4s	B Phase II MS4s (2000 Census)	C New Phase II MS4s (2010 Census **)	D MS4s within Indian Lands	Cooperative (*) Any Permittee with cooperative programs
Submit wet weather monitoring preference to EPA (i.e., individual monitoring program vs. cooperative monitoring program) with NOI submittals	NOI submittal Deadline (see Table 1)	NOI submittal Deadline (see Table 1)	NOI submittal Deadline (see Table 1)	NOI submittal Deadline (see Table 1)	NOI submittal Deadline (see Table 1)
Submit a detailed description of the monitoring scheme to EPA and NMED for approval. The monitoring scheme should include: a list of pollutants; a description of monitoring sites with an explanation of why those sites were selected; and a detailed map of all proposed monitoring sites	Ten (10) months from effective date of permit	Ten (10) months from effective date of permit	Eleven (11) months from effective date of permit	Eleven (11) months from effective date of permit	Twelve (12) months from effective date of permit
Submit certification that all wet weather monitoring sites are operational and begin sampling	Eleven (11) months from effective date of permit	Eleven (11) months from effective date of permit	Thirteen (13) months from effective date of permit	Thirteen (13) months from effective date of permit	Fourteen (14) months from effective date of permit
Update SWMP document and submit annual reports	Annually	Annually	Annually	Annually	Annually

(**) or MS4s designated by the Director

Note: The deadlines established in this table may be extended by the Director for any MS4 designated as needing a permit after issuance of this permit to accommodate expected date of permit coverage.

2. **Dry Weather Discharge Screening of MS4:** Each permittee shall identify, investigate, and address areas within its jurisdiction that may be contributing excessive levels of pollutants to the Municipal Separate Storm Sewer System as a result of dry weather discharges (i.e., discharges from separate storm sewers that occur without the direct influence of runoff from storm events, e.g. illicit discharges, allowable non-stormwater, groundwater infiltration, etc.). Due to the arid and semi-arid conditions of the area, the dry weather discharges screening program may be carried out during both wet season (July 1 through October 31) and dry Season (November 1 through June 30). Results of the assessment

shall be provided in each annual report. This program may be coordinated with the illicit discharge detection and elimination program required in Part I.D.5.e. The dry weather screening program shall be described in the SWMP and comply with the schedules contained in Part I.D.5.e.(iii). The permittee shall

- a. Include sufficient screening points to adequately assess pollutant levels from all areas of the MS4.
 - b. Screen for, at a minimum, BODs, sediment or a parameter addressing sediment (e.g., TSS or turbidity), E. coli, Oil and Grease, nutrients, any pollutant that has been identified as cause of impairment of a waterbody receiving discharges from that portion of the MS4, including temperature.
 - c. Specify the sampling and non-sampling techniques to be issued for initial screening and follow-up purposes. Sample collection and analysis need not conform to the requirements of 40 CFR Part 136; and
 - d. Perform monitoring only when an antecedent dry period of at least seventy-two (72) hours after a rain event greater than 0.1 inch in magnitude is satisfied. Monitoring methodology shall consist of collecting a minimum of four (4) grab samples spaced at a minimum interval of fifteen (15) minutes each. Grab samples will be combined into a single composite sample from each station, preserved, and delivered to the laboratory for analysis. A flow weighted automatic composite sample may also be used.
3. **Floatable Monitoring:** The permittees shall establish locations for monitoring/assessing floatable material in discharges to and/or from their MS4. Floatable material shall be monitored at least twice per year at priority locations and at minimum of two (2) stations except as provided in Part III.A.3. below. The amount of collected material shall be estimated in cubic yards.
- a. One (1) station should be located in the North Diversion (only applicable to the COA and AMAFCA).
 - b. Non-traditional MS4 as defined in Part VII shall sample/assess at one (1) station.
 - c. Phase II MS4s shall sample/assess at one (1) station within their jurisdiction or participate in a cooperative floatable monitoring plan addressing impacts on perennial waters of the US on a larger watershed basis.

A cooperative monitoring program may be established in partnership with other MS4s to monitor and assess floatable material in discharges to and/or from a joint jurisdictional area or watershed basis.

4. **Industrial and High Risk Runoff Monitoring** (Applicable only to Class A permittees): The permittees shall monitor stormwater discharges from Type 1 and 2 industrial facilities which discharge to the MS4 provided such facilities are located in their jurisdiction. (Note: if no such facilities are in the permittee's jurisdiction, the permittee must certify that this program element does not apply). The permittee shall:
- a. Conduct analytical monitoring of Type 1 facilities that discharge to the MS4. Type 1 facilities are municipal landfills; hazardous waste treatment, disposal and recovery facilities; facilities that are subject to EPCRA Title III, Section 313; and industrial facilities the permittee(s) determines are contributing a substantial pollutant loading to the MS4.
 - (i) The following parameters shall be monitored:
 - any pollutants limited in an existing NPDES permit to a subject facility;

- oil and grease;
 - chemical oxygen demand (COD);
 - pH;
 - biochemical oxygen demand, five-day (BOD₅);
 - total suspended solids (TSS);
 - total phosphorous;
 - total Kjeldahl nitrogen (TKN);
 - nitrate plus nitrite nitrogen;
 - any discharge information required under 40 CFR §122.21(g)(7)(iii) and (iv);
 - total cadmium;
 - total chromium;
 - total copper;
 - total lead;
 - total nickel;
 - total silver;
 - total zinc; and,
 - PCBs.
- (ii) Frequency of monitoring shall be established by the permittee(s), but may not be less than once per year;
- (iii) In lieu of the above parameter list, the permittee(s) may alter the monitoring requirement for any individual Type 1 facility:
- (a) To coincide with the corresponding industrial sector-specific monitoring requirements of the 2008 Multi-Sector General Stormwater Permit or any applicable general permit issued after September 2008. This exception is not contingent on whether a particular facility is actually covered by the general permit; or
 - (b) To coincide with the monitoring requirements of any individual permit for the stormwater discharges from that facility, and
 - (c) Any optional monitoring list must be supplemented by pollutants of concern identified by the permittee(s) for that facility.
- b. Conduct appropriate monitoring (e.g. analytic, visual), as determined by the permittee(s), at Type 2 facilities that discharge to the MS4. Type 2 facilities are other municipal waste treatment, storage, or disposal facilities (e.g. POTWs, transfer stations, incinerators) and industrial or commercial facilities the permittee(s) believed contributing pollutants to the MS4. The permittee shall include in each annual report, a list of parameters of concern and monitoring frequencies required for each type of facility.
- c. May use analytical monitoring data, on a parameter-by-parameter basis, that a facility has collected to comply with or apply for a State or NPDES discharge permit (other than this permit), so as to avoid unnecessary cost and duplication of effort;
- d. May allow the facility to test only one (1) outfall and to report that the quantitative data also apply to the substantially identical outfalls if:
- (i) A Type 1 or Type 2 industrial facility has two (2) or more outfalls with substantially identical effluents, and

- (ii) Demonstration by the facility that the stormwater outfalls are substantially identical, using one (1) or all of the following methods for such demonstration. The NPDES Stormwater Sampling Guidance Document (EPA 833-B-92-001), available on EPA's website at provides detailed guidance on each of the three options: (1) submission of a narrative description and a site map; (2) submission of matrices; or (3) submission of model matrices.
- b. May accept a copy of a "no exposure" certification from a facility made to EPA under 40 CFR §122.26(g), in lieu of analytic monitoring.

5. **Additional Sample Type, Collection and Analysis:**

- a. **Wet Weather (or Storm Event) Discharge Monitoring:** If storm event discharges are collected to meet the objectives of the Comprehensive Monitoring and Assessment Program required in Part III.A (e.g., assess compliance with this permit; assess the effectiveness of the permittee's stormwater management program; assess the impacts to receiving waters resulting from stormwater discharges), the following requirements apply:
 - (i) **Composite Samples:** Flow-weighted composite samples shall be collected as follows:
 - (a) **Composite Method –** Flow-weighted composite samples may be collected manually or automatically. For both methods, equal volume aliquots may be collected at the time of sampling and then flow-proportioned and composited in the laboratory, or the aliquot volume may be collected based on the flow rate at the time of sample collection and composited in the field.
 - (b) **Sampling Duration –** Samples shall be collected for at least the first three (3) hours of discharge. Where the discharge lasts less than three (3) hours, the permittee should report the value. .
 - (c) **Aliquot Collection –** A minimum of three (3) aliquots per hour, separated by at least fifteen (15) minutes, shall be collected. Where more than three (3) aliquots per hour are collected, comparable intervals between aliquots shall be maintained (e.g. six aliquots per hour, at least seven (7) minute intervals).
 - (ii) **Grab Samples:** Grab samples shall be taken during the first two (2) hours of discharge.
- b. **Analytical Methods:** Analysis and collection of samples shall be done in accordance with the methods specified at 40 CFR §136. Where an approved 40 CFR §136 method does not exist, any available method may be used unless a particular method or criteria for method selection (such as sensitivity) has been specified in the permit. The minimum quantification levels (MQLs) in Appendix F are to be used for reporting pollutant data for NPDES permit applications and/or compliance reporting.

Screening level tests may utilize less expensive "field test kits" using test methods not approved by EPA under 40 CFR 136, provided the manufacturers published detection ranges are adequate for the illicit discharge detection purposes.

EPA Method 1668 shall be utilized when PCB water column monitoring is conducted to determine compliance with permit requirements. For purposes of sediment sampling in dry weather as part of a screening program to identify area(s) where PCB control/clean-up efforts may need to be focused, either the Arochlor test (EPA Method 8082) or USGS test method (8093) may be utilized, but must use EPA Method 1668 (latest revision) for confirmation and determination of specific PCB levels at that location.

EPA Method 900.0 shall be utilized when gross alpha water column monitoring is conducted to determine compliance with permit requirements.

B. ANNUAL REPORT

The permittees shall submit an annual report to be submitted by no later than **December 1st**. See suggested form at <http://epa.gov/region6/water/npdes/sw/ms4/index.htm>. The report shall cover the previous year from **July 1st to June 30rd** and include the below separate sections. Additionally, the year one (1) and year four (4) annual report shall include submittal of a complete SWMP revision.

At least forty five (45) days prior to submission of each Annual Report, the permittee must provide public notice of and make available for public review and comment a draft copy of the Annual Report. All public input must be considered in preparation of the final Annual Reports and any changes to the SWMP.

Note: A complete copy of the signed Annual Report should be maintained on site.

1. **SWMP(s) status of implementation**: shall include the status of compliance with all schedules established under this permit and the status of actions required in Parts I, III, and VI.
2. **SWMP revisions**: shall include revisions, if necessary, to the assessments of controls or BMPs reported in the permit application (or NOI for coverage under this permit) under 40 CFR §122.26(d)(2)(v) and §122.34(d)(1)(i) are to be included, as well as a cumulative list of all SWMP revisions during the permit term.

Class A permittees shall include revisions, if necessary, to the fiscal analysis reported in the permit application (or NOI for coverage under this permit) under §122.26(d)(2)(vi).

3. **Performance assessment**: shall include:
 - a. an assessment of performance in terms of measurable goals, including, but not limited to, a description of the number and nature of enforcement actions and inspections, public education and public involvement efforts;
 - b. a summary of the data, including monitoring data, that is accumulated throughout the monitoring year (July 1 to June 30); actual values of representative monitoring results shall be included, if results are above minimum quantification level (MQL); and
 - c. an identification of water quality improvements or degradation.
4. **Annual expenditures**: for the reporting period, with a breakdown for the major elements of the stormwater management program and the budget for the year following each annual report. (Applicable only to Class A permittees)
5. **Annual Report Responsibilities for Cooperative Programs**: preparation of a system-wide report with cooperative programs may be coordinated among cooperating MS4s and then used as part of individual Annual Reports. The report of a cooperative program element shall indicate which, if any, permittee(s) have failed to provide the required information on the portions of the MS4 for which they are responsible to the cooperation permittees.
 - a. Joint responsibility for reports covering cooperative programs elements shall be limited to participation in preparation of the overview for the entire system and inclusion of the identity of any permittee who failed to provide input to the annual report.

- b. Individual permittees shall be individually responsible for content of the report relating to the portions of the MS4 for which they are responsible and for failure to provide information for the system-wide annual report no later than July 31st of each year.
6. **Public Review and Comment:** a brief summary of any issues raised by the public on the draft Annual Report, along with permittee's responses to the public comments.
7. **Signature on Certification of Annual Reports:** The annual report shall be signed and certified, in accordance with Part IV.H and include a statement or resolution that the permittee's governing body or agency (or delegated representative) has reviewed or been apprised of the content of the Annual Report. Annual report shall be due no later than December 1st of each year. A complete copy of the signed Annual Report should be maintained on site.

C. CERTIFICATION AND SIGNATURE OF RECORDS.

All reports required by the permit and other information requested by the EPA shall be signed and certified in accordance with Part IV.H.

D. REPORTING: WHERE AND WHEN TO SUBMIT

1. Monitoring results (Part III.A.1, Part III.A.3, Part III.A.5.a) obtained during the reporting period running from July 1st to June 30th shall be submitted on discharge monitoring report (DMR) forms along with the annual report required by Part III.B. A separate DMR form is required for each monitoring period (season) specified in Part III.A.1. If any individual analytical test result is less than the minimum quantification level (MQL) listed for that parameter, then a value of zero (0) may be used for that test result for the discharge monitoring report (DMR) calculations and reporting requirements. The annual report shall include the actual value obtained, if test result is less than the MQL (See Appendix F).
2. Signed copies of DMRs required under Part III, the Annual Report required by Part III.B, and all other reports required herein, shall be submitted in electronic form to R6_MS4Permits@epa.gov (note: there is an underscore between R6 and MS4).

Copy of a suggested Annual Report Format is located in EPA R6 website:
<http://epa.gov/region6/water/npdes/sw/ms4/index.htm>.

Electronic submittal of the documents required in the permit using a compatible Integrated Compliance Information System (ICIS) format would be allowed if available.

3. Requests for SWMP updates, modifications in monitoring locations, or application for an individual permit shall, be submitted to:

U.S. EPA, Region 6
Water Quality Protection Division
Operations Support Office (6WQ-O)
1445 Ross Avenue
Dallas, Texas 75202-2733
4. Additional Notification. Permittee(s) shall also provide copies of NOIs, DMRs, annual reports, NOTs, requests for SWMP updates, items for compliance with permit requirements for Compliance with Water Quality Standards in Part I.C.1, TMDL's reports established in Part I.C.2, monitoring scheme, reports, and certifications required in Part III.A.1, programs or changes in monitoring locations, and all other reports required herein, to:

New Mexico Environment Department
Attn: Bruce Yurdin, Program Manager
Surface Water Quality Bureau
Point Source Regulation Section
P.O. Box 5469
Santa Fe, New Mexico 87502

Pueblo of Sandia Environment Department
Attn: Scott Bulgrin, Water Quality Manager
481 Sandia Loop
Bernalillo, NM 87004

(Note: Only those MS4s with discharges upstream of or to waters under the jurisdictional of the Pueblo of Sandia: AMAFCA, Sandoval County, Village of Corrales, City of Rio Rancho, Town of Bernalillo, SSCAFCA, and ESCAFCA)

Pueblo of Isleta
Attn: Ramona M. Montoya, Environment Division Manager
P.O. Box 1270
Isleta NM 87022

(Notes: Only the City of Albuquerque, Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA), New Mexico Department of Transportation (NMDOT) District 3, KAFB (Kirtland Air Force Base), Sandia Labs (DOE), and Bernalillo County). All parties submitting an NOI or NOT shall notify the Pueblo of Isleta in writing that a NOI or NOT has been submitted to EPA

Water Resources Division Manager
Pueblo of Santa Ana
2 Dove Road

Santa Ana Pueblo, New Mexico 87004

(Note: Only those MS4s with discharges upstream of or to waters under the jurisdictional of the Pueblo of Santa Ana)

PART IV. STANDARD PERMIT CONDITIONS

A. DUTY TO COMPLY.

The permittee(s) must comply with all conditions of this permit insofar as those conditions are applicable to each permittee, either individually or jointly. Any permit noncompliance constitutes a violation of the Clean Water Act (The Act) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

B. PENALTIES FOR VIOLATIONS OF PERMIT CONDITIONS.

The EPA will adjust the Civil and administrative penalties listed below in accordance with the Civil Monetary Penalty Inflation Adjustment Rule (Federal Register: Dec. 31, 1996, Volume 61, No. 252, pages 69359-69366, as corrected, March 20, 1997, Volume 62, No. 54, pages 13514-13517) as mandated by the Debt Collection Improvement Act of 1996 for inflation on a periodic basis. This rule allows EPA's penalties to keep pace with inflation. The Agency is required to review its penalties at least once every four years thereafter and to adjust them as necessary for inflation according to a specified formula. The civil and administrative penalties listed below were adjusted for inflation starting in 1996.

1. Criminal Penalties.

- a. **Negligent Violations:** The Act provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than one (1) year, or both.
- b. **Knowing Violations:** The Act provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than \$5,000 nor more than \$50,000 per day of violation, or by imprisonment for not more than three (3) years, or both.
- c. **Knowing Endangerment:** The Act provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he is placing another person in imminent danger of death or serious bodily injury is subject to a fine of not more than \$250,000, or by imprisonment for not more than fifteen (15) years, or both.
- d. **False Statement:** The Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act, shall upon conviction, be punished by a fine of not more than \$10,000 or by imprisonment for not more than two (2) years, or by both. If a conviction is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than four (4) years, or by both. (See Section 309(c)(4) of the Act).

2. **Civil Penalties.** The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed \$27,500 per day for each violation.

3. **Administrative Penalties.** The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty, as follows:

- a. **Class I penalty:** Not to exceed \$11,000 per violation nor shall the maximum amount exceed \$27,500.

- b. Class II penalty: Not to exceed \$11,000 per day for each day during which the violation continues nor shall the maximum amount exceed \$137,500.
- C. **DUTY TO REAPPLY.** If the permittee wishes to continue an activity regulated by this permit after the permit expiration date, the permittee must apply for and obtain a new permit. The application shall be submitted at least 180 days prior to expiration of this permit. The EPA may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date. Continuation of expiring permits shall be governed by regulations promulgated at 40 CFR §122.6 and any subsequent amendments.
- D. **NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- E. **DUTY TO MITIGATE.** The permittee(s) shall take all reasonable steps to control or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.
- F. **DUTY TO PROVIDE INFORMATION.** The permittee(s) shall furnish to the EPA, within a time specified by the EPA, any information which the EPA may request to determine compliance with this permit. The permittee(s) shall also furnish to the EPA upon request copies of records required to be kept by this permit.
- G. **OTHER INFORMATION.** When the permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in any report to the EPA, he or she shall promptly submit such facts or information.
- H. **SIGNATORY REQUIREMENTS.** For a municipality, State, or other public agency, all DMRs, SWMPs, reports, certifications or information either submitted to the EPA or that this permit requires be maintained by the permittee(s), shall be signed by either a:
 - 1. Principal executive officer or ranking elected official; or
 - 2. Duly authorized representative of that person. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described above and submitted to the EPA.
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. A duly authorized representative may thus be either a named individual or any individual occupying a named position.
 - 3. If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new written authorization satisfying the requirements of this paragraph must be submitted to the EPA prior to or together with any reports, information, or applications to be signed by an authorized representative.
 - 4. Certification: Any person signing documents under this section shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

- I. PENALTIES FOR FALSIFICATION OF MONITORING SYSTEMS.** The Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by fines and imprisonment described in Section 309 of the Act.
- J. OIL AND HAZARDOUS SUBSTANCE LIABILITY.** Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under section 311 of the Act or section 106 of CERCLA.
- K. PROPERTY RIGHTS.** The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.
- L. SEVERABILITY.** The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

M. REQUIRING A SEPARATE PERMIT.

1. The EPA may require any permittee authorized by this permit to obtain a separate NPDES permit. Any interested person may petition the EPA to take action under this paragraph. The Director may require any permittee authorized to discharge under this permit to apply for a separate NPDES permit only if the permittee has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form (as necessary), a statement setting a deadline for the permittee to file the application, and a statement that on the effective date of the separate NPDES permit, coverage under this permit shall automatically terminate. Separate permit applications shall be submitted to the address shown in Part III.D. The EPA may grant additional time to submit the application upon request of the applicant. If an owner or operator fails to submit, prior to the deadline of the time extension, a separate NPDES permit application as required by the EPA, then the applicability of this permit to the permittee is automatically terminated at the end of the day specified for application submittal.
2. Any permittee authorized by this permit may request to be excluded from the coverage of this permit by applying for a separate permit. The permittee shall submit a separate application as specified by 40 CFR §122.26(d) for Class A permittees and by 40 CFR §122.33(b)(2) for Class B, C, and D permittees, with reasons supporting the request to the Director. Separate permit applications shall be submitted to the address shown in Part III.D.3. The request may be granted by the issuance of a separate permit if the reasons cited by the permittee are adequate to support the request.
3. When an individual NPDES permit is issued to a discharger otherwise subject to this permit, or the permittee is authorized to discharge under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the effective date of the individual permit or the date of authorization of coverage under the alternative general permit, whichever the case may be. When an individual NPDES permit is denied to an operator otherwise subject to this permit, or the operator is denied for coverage under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the date of such denial, unless otherwise specified by the permitting authority.

N. STATE / ENVIRONMENTAL LAWS.

1. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by section 510 of the Act.

2. No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations.

O. PROPER OPERATION AND MAINTENANCE. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of stormwater management programs. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.

P. MONITORING AND RECORDS.

1. The permittee must retain records of all monitoring information, including, all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, copies of Discharge Monitoring Reports (DMRs), a copy of the NPDES permit, and records of all data used to complete the NOI for this permit, for a period of at least three years from the date of the sample, measurement, report or application, or for the term of this permit, whichever is longer. This period may be extended by request of the permitting authority at any time.
2. The permittee must submit its records to the permitting authority only when specifically asked to do so. The permittee must retain a description of the SWMP required by this permit (including a copy of the permit language) at a location accessible to the permitting authority. The permittee must make its records, including the NOI and the description of the SWMP, available to the public if requested to do so in writing.
3. Records of monitoring information shall include:
 - a. The date, exact place, and time of sampling or measurements;
 - b. The initials or name(s) of the individual(s) who performed the sampling or measurements;
 - c. The date(s) analyses were performed;
 - d. The time(s) analyses were initiated;
 - e. The initials or name(s) of the individual(s) who performed the analyses;
 - f. References and written procedures, when available, for the analytical techniques or methods used; and
 - g. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results.
4. The permittee must maintain, for the term of the permit, copies of all information and determinations used to document permit eligibility under Parts I.A.5.f and Part I.A.3.b.

Q. MONITORING METHODS. Monitoring must be conducted according to test procedures approved under 40 CFR §136, unless other test procedures have been specified in this permit. The minimum quantification levels (MQLs) in Appendix F are to be used for reporting pollutant data for NPDES permit applications and/or compliance reporting.

R. INSPECTION AND ENTRY. The permittee shall allow the EPA or an authorized representative of EPA, or the State, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit;

NPDES Permit No. NMR04A000

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
 4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Act, any substance or parameters at any location.
- S. **PERMIT ACTIONS.** This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.
- T. **ADDITIONAL MONITORING BY THE PERMITTEE(S).** If the permittee monitors more frequently than required by this permit, using test procedures approved under 40 CFR §136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report (DMR). Such increased monitoring frequency shall also be indicated on the DMR.
- U. **ARCHEOLOGICAL AND HISTORIC SITES** (Applicable to areas within the corporate boundary of the City of Albuquerque and Tribal lands). This permit does not authorize any stormwater discharges nor require any controls to control stormwater runoff which are not in compliance with any historic preservation laws.
1. In accordance with the Albuquerque Archaeological Ordinance (Section 2-12-2, 14-16-5, and 14-14-3-4), an applicant for either:
 - a. A preliminary plan for any subdivision that is five acres or more in size; or
 - b. A site development plan or master development plan for a project that is five acres or more in size on property that is zoned SU-1 Special Use, IP Industrial Park, an SU-2 zone that requires site plan review, PC Planned Community with a site, or meets the Zoning Code definition of a Shopping Center must first obtain either a Certificate of No Effect or a Certificate of Approval from the City Archaeologist. Details of the requirements for a Certificate of No Effect or a Certificate of Approval are described in the ordinance. Failure to obtain a certificate as required by ordinance shall subject the property owner to the penalties of §1-1-99 ROA 1994.
 2. If municipal excavation and/or construction projects implementing requirements of this permit will result in the disturbance of previously undisturbed land, and the project is not required to have a separate NPDES permit (e.g. general permit for discharge of stormwater associated with construction activity), then the permittee may seek authorization for stormwater discharges from such sites of disturbance by:
 - a. Submitting, thirty (30) days prior to commencing land disturbance, the following to the State Historic Preservation Officer (SHPO) and to appropriate Tribes and Tribal Historic Preservation Officers for evaluation of possible effects on properties listed or eligible for listing on the National Register of Historic Places:
 - (i) A description of the construction or land disturbing activity and the potential impact that this activity may have upon the ground, and
 - (ii) A copy of a USGS topographic map outlining the location of the project and other ancillary impact areas.
 - (iii) The addresses of the SHPO, Sandia Pueblo, and Isleta Pueblo are:

State Historic Preservation Officer
New Mexico Historic Preservation Division

Bataan Memorial Building
407 Galisteo Street, Ste. 236
Santa Fe, New Mexico 87501

Pueblo of Sandia Environment Department
Attn: Frank Chaves, Environment Director
481 Sandia Loop
Bernalillo, New Mexico 87004

Pueblo of Isleta
Department of Cultural and Historic Preservation
Attn: Daniel Waseta, Director
P.O. Box 1270
Isleta NM 87022

Water Resources Division Manager
Pueblo of Santa Ana
2 Dove Road
Santa Ana Pueblo, New Mexico 87004

3. If the permittee receives a request for an archeological survey or notice of adverse effects from the SHPO, the permittee shall delay such activity until:
 - a. A cultural resource survey report has been submitted to the SHPO for a review and a determination of no effect or no adverse effect has been made, and
 - b. If an adverse effect is anticipated, measures to minimize harm to historic properties have been agreed upon between the permittee and the SHPO.
4. If the permittee does not receive notification of adverse effects or a request for an archeological survey from the SHPO within thirty (30) days, the permittee may proceed with the activity.
5. Alternately, the permittee may obtain authorization for stormwater discharges from such sites of disturbance by applying for a modification of this permit. The permittee may apply for a permit modification by submitting the following information to the Permitting Authority 180 days prior to commencing such discharges:
 - a. A letter requesting a permit modification to include discharges from activities subject to this provision, in accordance with the signatory requirements in Part IV.H.
 - b. A description of the construction or land disturbing activity and the potential impact that this activity may have upon the ground; County in which the facility will be constructed; type of facility to be constructed; size area (in acres) that the facility will encompass; expected date of construction; and whether the facility is located on land owned or controlled by any political subdivision of New Mexico; and
 - c. A copy of a USGS topographic map outlining the location of the project and other ancillary impact areas.

V. CONTINUATION OF THE EXPIRED GENERAL PERMIT. If this permit is not reissued or replaced prior to the expiration date, it will be administratively continued in accordance with the Administrative Procedures Act and remain in force and effect. Any permittee who was granted permit coverage prior to the expiration date will automatically remain covered by the continued permit until the earlier of:

NPDES Permit No. NMR04A000

1. Reissuance or replacement of this permit, at which time the permittee must comply with the Notice of Intent conditions of the new permit to maintain authorization to discharge; or
 2. Issuance of an individual permit for your discharges; or
 3. A formal permit decision by the permitting authority not to reissue this general permit, at which time the permittee must seek coverage under an alternative general permit or an individual permit.
- W. **PERMIT TRANSFERS:** This permit is not transferable to any person except after notice to the permitting authority. The permitting authority may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Act.
- X. **ANTICIPATED NONCOMPLIANCE.** The permittee must give advance notice to the permitting authority of any planned changes in the permitted small MS4 or activity which may result in noncompliance with this permit. (see
- Y. **PROCEDURES FOR MODIFICATION OR REVOCATION:** Permit modification or revocation will be conducted according to 40 CFR 122.62, 122.63, 122.64 and 124.5.

PART V. PERMIT MODIFICATION

A. MODIFICATION OF THE PERMIT. The permit may be reopened and modified, in accordance with 40 CFR §122.62, §122.63, and §124.5, during the life of the permit to address:

1. Changes in the State's Water Quality Management Plan, including Water Quality Standards;
2. Changes in applicable water quality standards, statutes or regulations;
3. A new permittee who is the owner or operator of a portion of the MS4;
4. Changes in portions of the SWMP that are considered permit conditions;
5. Construction activities implementing requirements of this permit that will result in the disturbance of previously undisturbed land and not required to have a separate NPDES permit; or
6. Other modifications deemed necessary by the EPA to meet the requirements of the Act.

B. MODIFICATION OF THE SWMP(s). Only those portions of the SWMPs specifically required as permit conditions shall be subject to the modification requirements of 40 CFR §124.5. Addition of components, controls, or requirements by the permittee(s); replacement of an ineffective or infeasible control implementing a required component of the SWMP with an alternate control expected to achieve the goals of the original control; and changes required as a result of schedules contained in Part VI shall be considered minor changes to the SWMP and not modifications to the permit. (See also Part I.D.6)

C. CHANGES IN REPRESENTATIVE MONITORING SITES. Changes in monitoring sites, other than those with specific numeric effluent limitations (as described in Part III.A.1.g), shall be considered minor modifications to the permit and shall be made in accordance with the procedures at 40 CFR §122.63.

PART VI. SCHEDULES FOR IMPLEMENTATION AND COMPLIANCE.

- A. IMPLEMENTATION AND AUGMENTATION OF THE SWMP(s).** The permittee(s) shall comply with all elements identified in Parts I and III for SWMP implementation and augmentation, and permit compliance. The EPA shall have sixty (60) days from receipt of a modification or augmentation made in compliance with Part VI to provide comments or request revisions. During the initial review period, EPA may extend the time period for review and comment. The permittee(s) shall have thirty (30) days from receipt of the EPA's comments or required revisions to submit a response. All changes to the SWMP or monitoring plans made to comply with schedules in Parts I and III must be approved by EPA prior to implementation.
- B. COMPLIANCE WITH EFFLUENT LIMITATIONS.** Reserved.
- C. REPORTING COMPLIANCE WITH SCHEDULES.** No later than fourteen (14) days following a date for a specific action (interim milestone or final deadline) identified in the Part VI schedule(s), the permittee(s) shall submit a written notice of compliance or noncompliance to the EPA in accordance with Part III.D.
- D. MODIFICATION OF THE SWMP(s).** The permittee(s) shall modify its SWMP, as appropriate, in response to modifications required in Part VI.A. Such modifications shall be made in accordance with Part V.B.

PART VII. DEFINITIONS

All definitions contained in Section 502 of the Act shall apply to this permit and are incorporated herein by reference. Unless otherwise specified, additional definitions of words or phrases used in this permit are as follows:

- (1) **Baseline Load** means the load for the pollutant of concern which is present in the waterbody before BMPs or other water quality improvement efforts are implemented.
- (2) **Best Management Practices (BMPs)** means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.
- (3) **Bioretention** means the water quality and water quantity stormwater management practice using the chemical, biological and physical properties of plants, microbes and soils for the removal of pollution from stormwater runoff.
- (4) **Canopy Interception** means the interception of precipitation, by leaves and branches of trees and vegetation that does not reach the soil.
- (5) **Contaminated Discharges:** The following discharges are considered contaminated:
 - Has had a discharge resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 117.21 or 40 CFR 302.6 at any time since November 16, 1987; or
 - Has had a discharge resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 110.6 at any time since November 16, 1987; or
 - Contributes to a violation of an applicable water quality standard.
- (6) **Controls or Control Measures or Measures** means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or control the pollution of waters of the United States. Controls also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.
- (7) **Controllable Sources:** Sources, private or public, which fall under the jurisdiction of the MS4.
- (8) **CWA or The Act** means Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub.L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483 and Pub. L. 97-117, 33 U.S.C. 1251 et seq.
- (9) **Co-permittee** means a permittee to a NPDES permit that is only responsible for permit conditions relating to the discharge for which it is operator.
- (10) **Composite Sample** means a sample composed of two or more discrete samples. The aggregate sample will reflect the average water quality covering the compositing or sample period.
- (11) **Core Municipality** means, for the purpose of this permit, the municipality whose corporate boundary (unincorporated area for counties and parishes) defines the municipal separate storm sewer system. (ex. City of Dallas for the Dallas Municipal Separate Storm Sewer System, Harris County for unincorporated Harris County).
- (12) **Direct Connected Impervious Area (DCIA)** means the portion of impervious area with a direct hydraulic connection to the permittee's municipal separate storm sewer system or a waterbody via continuous paved surfaces, gutters, pipes, and other impervious features. Direct connected impervious area typically does not include isolated impervious areas with an indirect hydraulic connection to the municipal separate storm sewer system (e.g., swale or detention basin) or that otherwise drain to a pervious area.
- (13) **Director** means the Regional Administrator or an authorized representative.
- (14) **Discharge** for the purpose of this permit, unless indicated otherwise, means discharges from the municipal separate storm sewer system.
- (15) **Discharge-related activities** include: activities which cause, contribute to, or result in storm water point source pollutant discharges; and measures to control storm water discharges, including the siting, construction and operation of best management practices (BMPs) to control, reduce or prevent storm water pollution.
- (16) **Engineered Infiltration** means an underground device or system designed to accept stormwater and slowly exfiltrates it into the underlying soil. This device or system is designed based on soil tests that define the exfiltration rate.
- (17) **Evaporation** means rainfall that is changed or converted into a vapor.
- (18) **Evapotranspiration** means the sum of evaporation and transpiration of water from the earth's surface to the atmosphere. It includes evaporation of liquid or solid water plus the transpiration of plants.
- (19) **Extended Filtration** means a structural stormwater practice which filters stormwater runoff through vegetation and engineered soil media. A portion of the stormwater runoff drains into an underdrain system which slowly releases it after the storm is over.

- (20) **Facility** means any NPDES "point source" or any other facility (including land or appurtenances thereto) that is subject to regulation under the NPDES program.
- (21) **Flood Control Projects** mean major drainage projects developed to control water quantity rather than quality, including channelization and detention.
- (22) **Flow-weighted composite sample** means a composite sample consisting of a mixture of aliquots collected at a constant time interval, where the volume of each aliquot is proportional to the flow rate of the discharge.
- (23) **Grab Sample** means a sample which is taken from a wastestream on a one-time basis without consideration of the flow rate of the wastestream and without consideration of time.
- (24) **Green Infrastructure** means an array of products, technologies, and practices that use natural systems – or engineered systems that mimic natural processes – to enhance overall environmental quality and provide utility services. As a general principal, Green Infrastructure techniques use soils and vegetation to infiltrate, evapotranspire, and/or recycle stormwater runoff. When used as components of a stormwater management system, Green Infrastructure practices such as green roofs, porous pavement, rain gardens, and vegetated swales can produce a variety of environmental benefits. In addition to effectively retaining and infiltrating rainfall, these technologies can simultaneously help filter air pollutants, reduce energy demands, mitigate urban heat islands, and sequester carbon while also providing communities with aesthetic and natural resource benefits.
- (25) **Hydromodification** means the alteration of the natural flow of water through a landscape, and often takes the form of channel straightening, widening, deepening, or relocating existing, natural stream channels. It also can involve excavation of borrow pits or canals, building of levees, streambank erosion, or other conditions or practices that change the depth, width or location of waterways. Hydromodification usually results in water quality and habitat impacts.
- (26) **Illicit connection** means any man-made conveyance connecting an illicit discharge directly to a municipal separate storm sewer.
- (27) **Illicit discharge** means any discharge to a municipal separate storm sewer that is not composed entirely of stormwater except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from fire fighting activities.
- (28) **Impervious Area (IA)** means conventional pavements, sidewalks, driveways, roadways, parking lots, and rooftops.
- (29) **Indian Country** means:
 - a. All land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and, including rights-of-way running through the reservation;
 - b. All dependent Indian communities within the borders of the United States whether within the originally or subsequently acquired territory thereof, and whether within or without the limits of a state; and
 - c. All Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same. This definition includes all land held in trust for an Indian tribe.
- (30) **Individual Residence** means, for the purposes of this permit, single or multi-family residences. (e.g. single family homes and duplexes, town homes, apartments, etc.)
- (31) **Infiltration** means the process by which stormwater penetrates the soil.
- (32) **Land application unit** means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.
- (33) **Landfill** means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.
- (34) **Land Use** means the way in which land is used, especially in farming and municipal planning.
- (35) **Large or medium municipal separate storm sewer system** means all municipal separate storm sewers that are either:
 - (i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendix F of 40 CFR §122); or (ii) located in the counties with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers are located in the incorporated places, townships, or towns within such counties (these counties are listed in Appendices H and I of 40 CFR §122); or (iii) owned or operated by a municipality other than those described in Paragraph (i) or (ii) and that are designated by the Regional Administrator as part of the large or medium municipal separate storm sewer system.
- (36) **MEP** means maximum extent practicable, the technology-based discharge standard for municipal separate storm sewer systems to reduce pollutants in storm water discharges. A discussion of MEP as it applies to small MS4s is found at 40 CFR 122.34. CWA section 402(p)(3)(B)(iii) requires that a municipal permit "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system design, and engineering methods, and other provisions such as the Administrator or the State determines appropriate for the control of such pollutants.
- (37) **Measurable Goal** means a quantitative measure of progress in implementing a component of storm water management program.

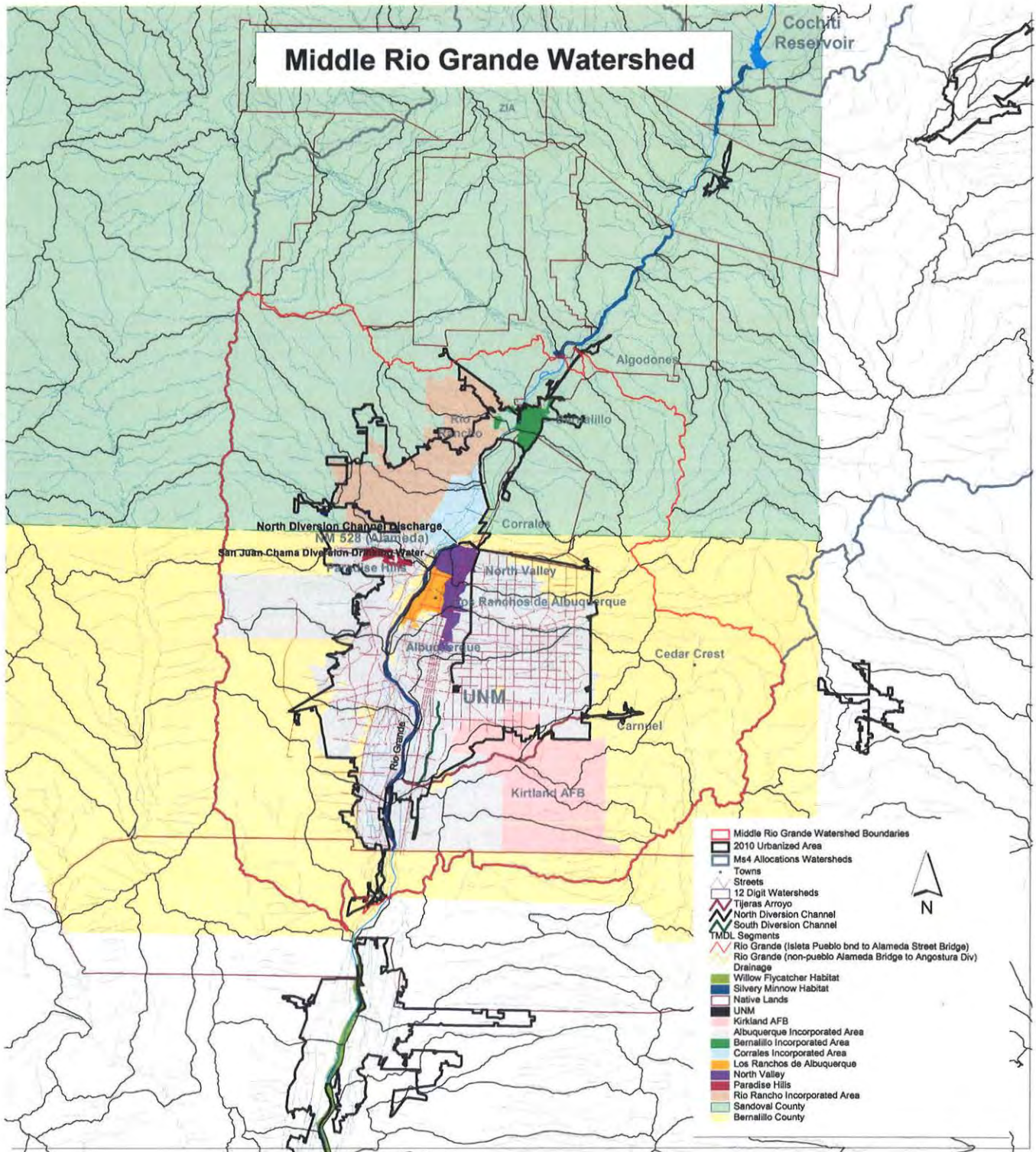
- (38) **Municipal Separate Storm Sewer (MS4)** means all separate storm sewers that are defined as "large" or "medium" or "small" municipal separate storm sewer systems pursuant to paragraphs 40 CFR §122.26(b)(4), (b)(7), and (b)(16), or designated under paragraph 40 CFR §122.26(a)(1)(v).
- (39) **Non-traditional MS4** means systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings. 40 CFR 122.26(a)(16)(iii).
- (40) **NOI** means Notice of Intent to be covered by this permit (see Part I.B of this permit)
- (41) **NOT** means Notice of Termination.
- (42) **Outfall** means a *point source* as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States.
- (43) **Percent load reduction** means the difference between the baseline load and the target load divided by the baseline load.
- (44) **Owner or operator** means the owner or operator of any "facility or activity" subject to regulation under the NPDES program.
- (45) **Permittee** refers to any person (defined below) authorized by this NPDES permit to discharge to Waters of the United States.
- (46) **Permitting Authority** means EPA, Region 6.
- (47) **Person** means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.
- (48) **Point Source** means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.
- (49) **Pollutant** is defined at 40 CFR 122.2. Pollutant means dredged spoil, solid waste, incinerator residue, filter back-wash, sewage, garbage, sewage sludge. Munitions, chemical waste, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011), heat, wrecked or discarded equipment, rock sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.
- (50) **Pre-development Hydrology**, Predevelopment hydrology is generally the rain volume at which runoff would be produced when a site or an area is in its natural condition, prior to development disturbances. For the Middle Rio Grande area, EPA considers predevelopment conditions to be a mix of woods and desert shrub.
- (51) **Rainfall and Rainwater Harvesting** means the collection, conveyance, and storage of rainwater. The scope, method, technologies, system complexity, purpose, and end uses vary from rain barrels for garden irrigation in urban areas, to large-scale collection of rainwater for all domestic uses.
- (52) **Soil amendment** means adding components to in-situ or native soils to increase the spacing between soil particles so that the soil can absorb and hold more moisture. The amendment of soils changes various other physical, chemical and biological characteristics so that the soils become more effective in maintaining water quality.
- (53) **Storm drainage projects** include stormwater inlets, culverts, minor conveyances and a host of other structures or devices.
- (54) **Storm sewer**, unless otherwise indicated, means a municipal separate storm sewer.
- (55) **Stormwater** means stormwater runoff, snow melt runoff, and surface runoff and drainage.
- (56) **Stormwater Discharge Associated with Industrial Activity** means the discharge from any conveyance which is used for collecting and conveying stormwater and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant (See 40 CFR §122.26(b)(14) for specifics of this definition).
- (57) **Target load** means the load for the pollutant of concern which is necessary to attain water quality goals (e.g. applicable water quality standards).
- (58) **Stormwater Management Program (SWMP)** means a comprehensive program to manage the quality of stormwater discharged from the municipal separate storm sewer system. For the purposes of this permit, the Stormwater Management Program is considered a single document, but may actually consist of separate programs (e.g. "chapters") for each permittee.
- (59) **Targeted controls** means practices implemented to address particular pollutant of concern. For example litter program targets floatables.
- (60) **Time-weighted composite** means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.
- (61) **Total Maximum Daily Load (TMDL)** means a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. A TMDL is the sum of individual wasteload allocations for point sources (WLA), load allocations for non-point sources and natural background (LA), and must consider seasonal variation and include a margin of safety. The TMDL comes in the form of a technical document or plan.

- (62) **Toxicity** means an LC50 of <100% effluent.
- (63) **Waste load allocation (WLA)** means the portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. WLAs constitute a type of water quality-based effluent limitation.
- (64) **Wetlands** means those areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.
- (65) **Whole Effluent Toxicity (WET)** means the aggregate toxic effect of an effluent measured directly by a toxicity test.

PART VIII PERMIT CONDITIONS APPLICABLE TO SPECIFIC AREAS OR INDIAN COUNTY LANDS

Reserved

Appendix A - Middle Rio Grande Watershed Jurisdictions and Potential Permittees



Middle Rio Grande Watershed Jurisdictions and Potential Permittees

Class A:

City of Albuquerque
AMAFCA (Albuquerque Metropolitan Arroyo Flood Control Authority)
UNM (University of New Mexico)
NMDOT (New Mexico Department of Transportation District 3)

Class B:

Bernalillo County
Sandoval County
Village of Corrales
City of Rio Rancho
Los Ranchos de Albuquerque
KAFB (Kirtland Air Force Base)
Town of Bernalillo
EXPO (State Fairgrounds/Expo NM)
SSCAFCA (Southern Sandoval County Arroyo Flood Control Authority)
NMDOT (New Mexico Department of Transportation District 3)

Class C:

ESCAFCA (Eastern Sandoval County Arroyo Flood Control Authority)
Sandia Labs (DOE)

Class D:

Pueblo of Sandia
Pueblo of Isleta
Pueblo of Santa Ana

Note: There could be additional potential permittees.

NMDOT Dist. 3 falls into the Class A type permittee, if an individual program is developed or/and implemented. The timelines for cooperative programs should be used, if NMDOT Dist. 3 cooperates with other permittees.

Appendix B - Total Maximum Daily Loads (TMDLs)

B.1. Approved Total Maximum Daily Loads (TMDLs) Tables

A bacteria TMDL for the Middle Rio Grande was approved by the New Mexico Water Quality Control Commission on April 13, 2010, and by EPA on June 30, 2010. The new TMDL modifies: 1) the indicator parameter for bacteria from fecal coliform to *E. coli*, and 2) the way the WLAs are assigned

Discharges to Impaired Waters – TMDL Waste Load Allocations (WLAs)² for *E. coli*: Rio Grande¹

Stream Segment	Stream Name	Permittee Class	FLOW CONDITIONS & ASSOCIATED WLA (cfu/day) ³				
			High	Moist	Mid-Range	Dry	Low
2105_50	Isleta Pueblo boundary to Alameda Street Bridge (based on flow at USGS Station NM08330000)	Class A ⁴	3.36x10 ¹⁰	8.41 x10 ¹⁰	5.66 x10 ¹⁰	2.09 x10 ¹⁰	4.67 x10 ⁹
		Class B ⁵ Class C ⁶	3.73 x10 ⁹	9.35 x10 ⁹	6.29 x10 ⁹	2.32 x10 ⁹	5.19 x10 ⁸
2105.1_00	non-Pueblo Alameda Bridge to Angostura Diversion (based on flow at USGS Station NM08329928)	Class A	5.25 x10 ¹⁰	1.52 x10 ¹⁰	—	5.43 x10 ⁹	2.80 x10 ⁹
		Class B Class C	2.62 x10 ¹¹	7.59 x10 ¹⁰	—	2.71 x10 ¹⁰	1.40 x10 ¹⁰

- 1 Total Maximum Daily Load for the Middle Rio Grande Watershed, NMED, 2010.
- 2 The WLAs for the stormwater MS4 permit was based on the percent jurisdiction area approach. Thus, the MS4 WLAs are a percentage of the available allocation for each hydrologic zone, where the available allocation = TMDL – WLA – MOS.
- 3 Flow conditions relate to percent of days the flow in the Rio Grande at a USGS Gauge exceeds a particular level: High 0-10%; Moist 10-40%; Mid-Range 40-60%; Dry 60-90%; and Low 90-100%. (Source: Figures 4.3 and 4.4 in 2010 Middle Rio Grande TMDL)
- 4 Phase I MS4s
- 5 Phase II MS4s (2000 Census)
- 6 New Phase II MS4s (2010 Census or MS4s designated by the Director)

Estimating Target Loadings for Particular Monitoring Location:

The Table in B.2 below provides a mechanism to calculate, based on acreage within a drainage area, a target loading value for a particular monitoring location.

B.2. Calculating Alternative Sub-measurable Goals

Individual permittees or a group of permittees seeking alternative sub-measurable goals under C.2.b.(i).(c).B should consult NMED. Preliminary proposals should be submitted with the Notice of Intent (NOI) under Part I.B.2.k according to the due dates specified in Part I.B.1.a of the permit. This proposal shall include, but is not limited to, the following items

B.2.1 Determine base loading for subwatershed areas consistent with TMDL

- a. Using the table below, the permittee must develop a target load consistent with the TMDL for any sampling point in the watershed (even if it includes area outside the jurisdictional area of the permit).

E. coli loading on a per area basis (cfu/sq mi/day)

	high	moist	mid	dry	low
Alameda to Isleta	1.79E+09	4.48E+08	3.02E+08	1.11E+08	2.58E+07
Angostura to Alameda	3.25E+09	9.41E+08	5.19E+08	3.37E+08	1.74E+08

- b. An estimation of the pertinent, subwatershed area that the permittee is responsible for and the basis for determining that area, including the means for excluding any tributary inholdings;
- c. Using the total loading for the watershed (from part a) and the percentage of the watershed area that is part of the permittee(s) jurisdiction (part b) to calculate a base WLA for this subwatershed.

B.2.2 Set Alternative subwatershed targets

- a. Permittee(s) may reallocate WLA within and between subwatershed based on factors including:
 - Population density within the pertinent watershed area;
 - Slope of the waterway;
 - Percent impervious surface and how that value was determined;
 - Stormwater treatment, installation of green infrastructure for the control or treatment of stormwater and stormwater pollution prevention and education programs within specific watersheds
- b. A proposal for an alternative subwatershed target must include the rationale for the factor(s) used

B.2.3 Ensure overall compliance with TMDL WLA allocation

The permittee(s) will provide calculations demonstrating the total WLA under the alternative proposed in (Part II) is consistent with the baseline calculated in (Part I) based on their total jurisdictional area. Permittee(s) will not be allowed to allocate more area within the watershed than is accorded to them under their jurisdictional area. For permittees that work cooperatively, WLA calculations may be combined and used where needed within the sub-watershed amongst the cooperating parties.

WLA calculations must be sent as part of the Notice of Intent to EPA via e-mail at R6_MS4Permits@epa.gov. These calculations must also be sent to:

Sarah Holcomb
Industrial and Stormwater Team Leader
NMED Surface Water Quality Bureau
P.O. Box 5469,

Appendix C - Historic Properties Eligibility Procedures

MS4 operators must determine whether their MS4's storm water discharges, allowable non-storm water discharges, or construction of best management practices (BMPs) to control such discharges, have potential to affect a property that is either listed or eligible for listing on the National Register of Historic Places.

For existing dischargers who do not need to construct BMPs for permit coverage, a simple visual inspection may be sufficient to determine whether historic properties are affected. However, for MS4s which are new storm water dischargers and for existing MS4s which are planning to construct BMPs for permit eligibility, MS4 operators should conduct further inquiry to determine whether historic properties may be affected by the storm water discharge or BMPs to control the discharge. In such instances, MS4 operators should first determine whether there are any historic properties or places listed on the National Register or if any are eligible for listing on the register (e.g., they are "eligible for listing").

Due to the large number of entities seeking coverage under this permit and the limited number of personnel available to State and Tribal Historic Preservation Officers nationwide to respond to inquiries concerning the location of historic properties, EPA suggests that MS4 operators first access the "National Register of Historic Places" information listed on the National Park Service's web page (www.nps.gov/nr/). Addresses for State Historic Preservation Officers and Tribal Historic Preservation Officers are listed in Parts II and III of this appendix, respectively. In instances where a Tribe does not have a Tribal Historic Preservation Officer, MS4 operators should contact the appropriate Tribal government office when responding to this permit eligibility condition. MS4 operators may also contact city, county or other local historical societies for assistance, especially when determining if a place or property is eligible for listing on the register. Tribes that do not currently reside in an area may also have an interest in cultural properties in areas they formerly occupied. Tribal contact information is available at <http://www.epa.gov/region06/6dra/oejta/tribalaffairs/index.html>

The following three scenarios describe how MS4 operators can meet the permit eligibility criteria for protection of historic properties under this permit:

- (1) If historic properties are not identified in the path of an MS4's storm water and allowable non-storm water discharges or where construction activities are planned to install BMPs to control such discharges (e.g., diversion channels or retention ponds), then the MS4 operator has met the permit eligibility criteria under Part I.A.3.b.(i).
- (2) If historic properties are identified but it is determined that they will not be affected by the discharges or construction of BMPs to control the discharge, the MS4 operator has met the permit eligibility criteria under Part I.A.3.b.(ii).
- (3) If historic properties are identified in the path of an MS4's storm water and allowable non-storm water discharges or where construction activities are planned to install BMPs to control such discharges, and it is determined that there is the potential to adversely affect the property, the MS4 operator can still meet the permit eligibility criteria under Part I.A.3.b.(ii) if he/she obtains and complies with a written agreement with the appropriate State or Tribal Historic Preservation Officer which outlines measures the MS4 operator will follow to mitigate or prevent those adverse effects. The operator should notify EPA before exercising this option.

The contents of such a written agreement must be included in the MS4's Storm Water Management Program.

In situations where an agreement cannot be reached between an MS4 operator and the State or Tribal Historic Preservation Officer, MS4 operators should contact EPA for assistance.

The term "adverse effects" includes but is not limited to damage, deterioration, alteration or destruction of the historic property or place. EPA encourages MS4 operators to contact the appropriate State or Tribal Historic Preservation Officer as soon as possible in the event of a potential adverse effect to a historic property.

MS4 operators are reminded that they must comply with applicable State, Tribal and local laws concerning the protection of historic properties and places.

I. Internet Information on the National Register of Historic Places

An electronic listing of the "National Register of Historic Places," as maintained by the National Park Service on its National Register Information System (NRIS), can be accessed on the Internet at www.nps.gov/nr/.

II. State Historic Preservation Officers (SHPO)

SHPO List for areas covered by the permit:

NEW MEXICO

Historic Preservation Div, Office of Cultural Affairs
Bataan Memorial Building, 407 Galisteo Street, Suite 236
Santa Fe, NM 87501
505-827-6320 FAX: 505-827-6338

III. Tribal Historic Preservation Officers (THPO)

In instances where a Tribe does not have a Tribal Historic Preservation Officer, please contact the appropriate Tribal government office when responding to this permit eligibility condition.

Tribal Historic Preservation Officers:

Mescalero Apache Tribe
P.O. Box 227
Mescalero, New Mexico 88340

Pueblo of Sandia Environment Department
Attn: Frank Chaves, Environment Director
481 Sandia Loop
Bernalillo, New Mexico 87004

Pueblo of Isleta
Department of Cultural and Historic Preservation
Attn: Dr. Henry Walt, THPO
P.O. Box 1270
Isleta NM 87022

Water Resources Division Manager
Pueblo of Santa Ana
2 Dove Road
Santa Ana Pueblo, New Mexico 87004

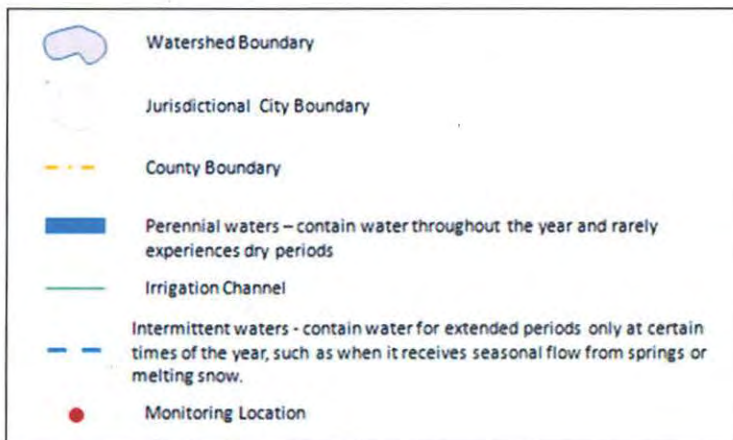
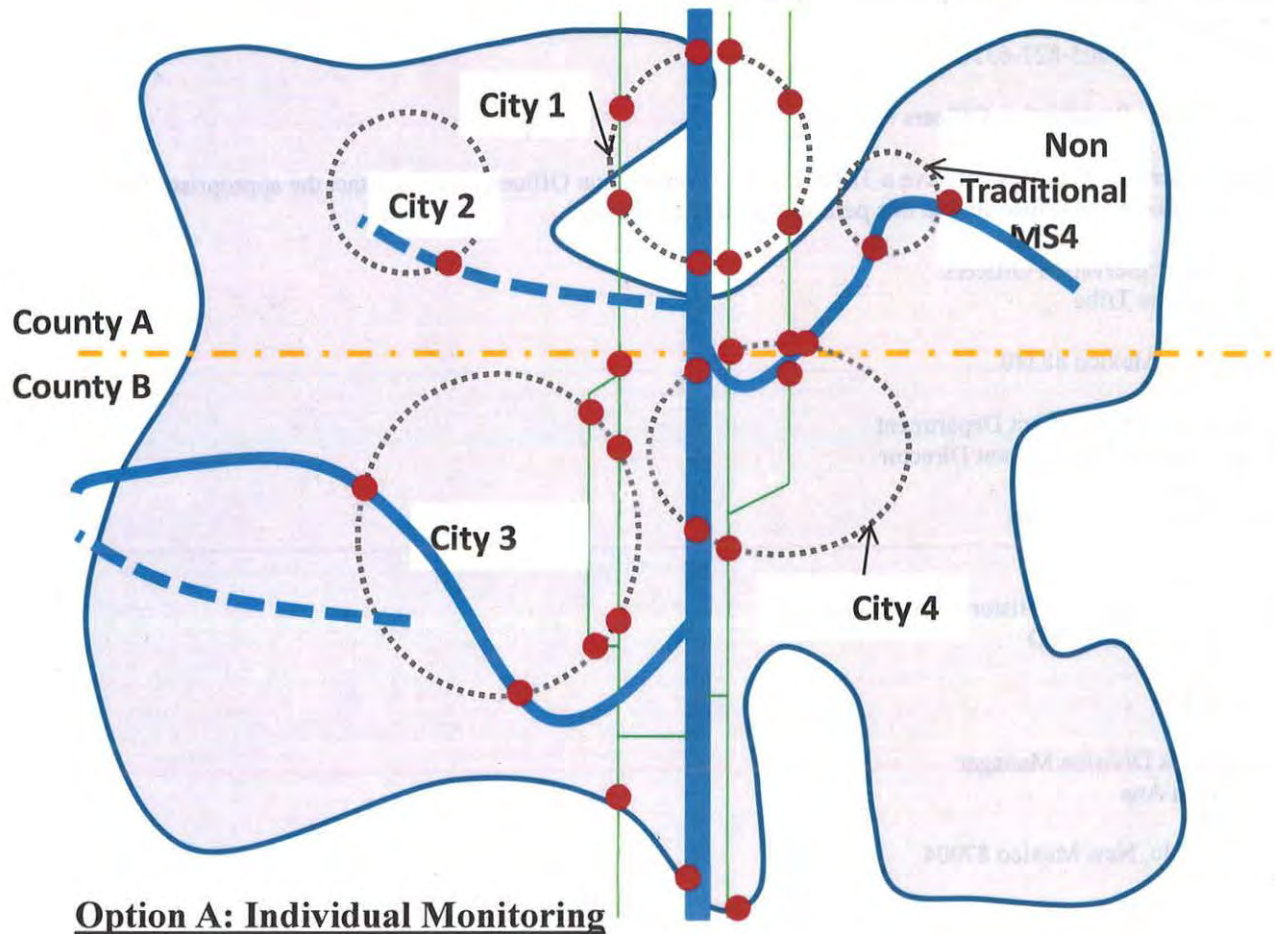
For more information:

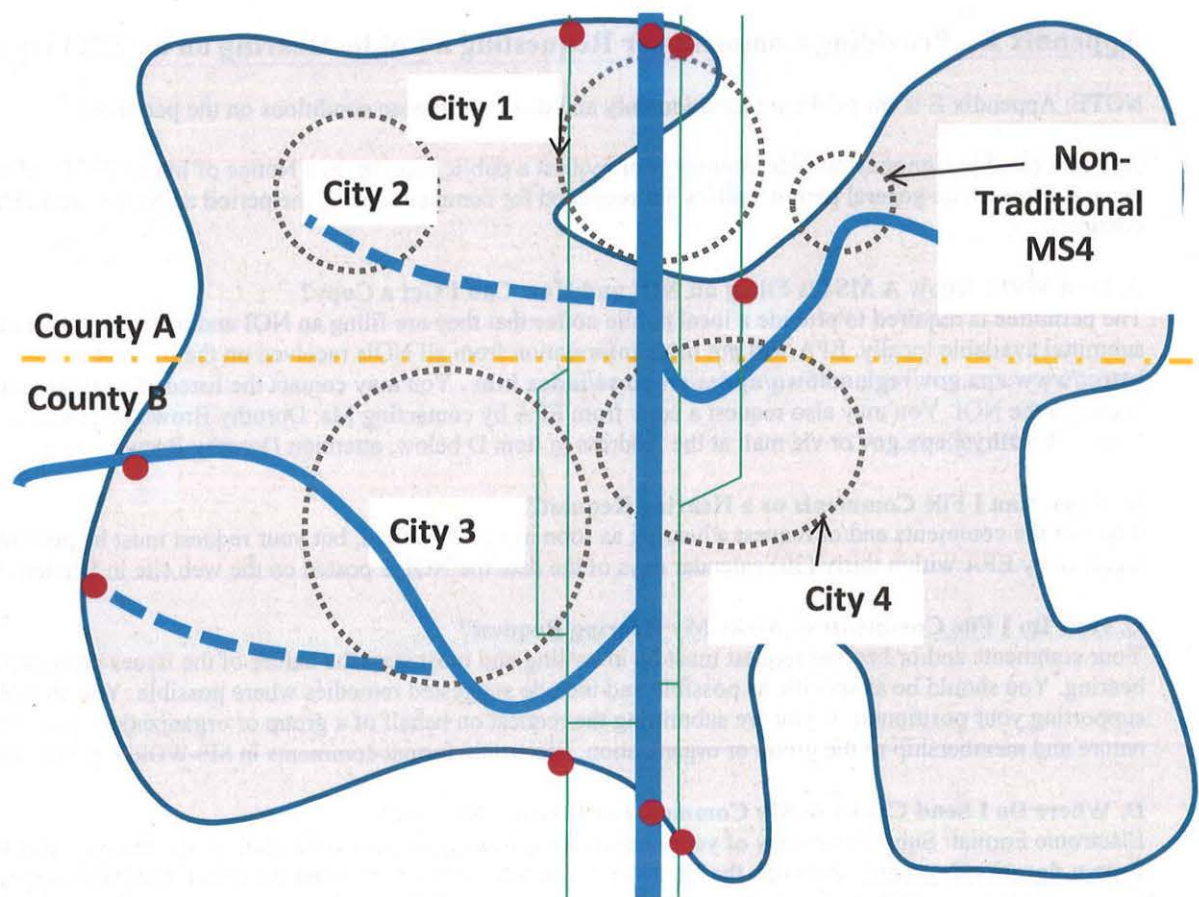
National Association of Tribal Historic
Preservation Officers
P.O. Box 19189
Washington, DC 20036-9189
Phone: (202) 628-8476
Fax: (202) 628-2241

IV. Advisory Council on Historic Preservation

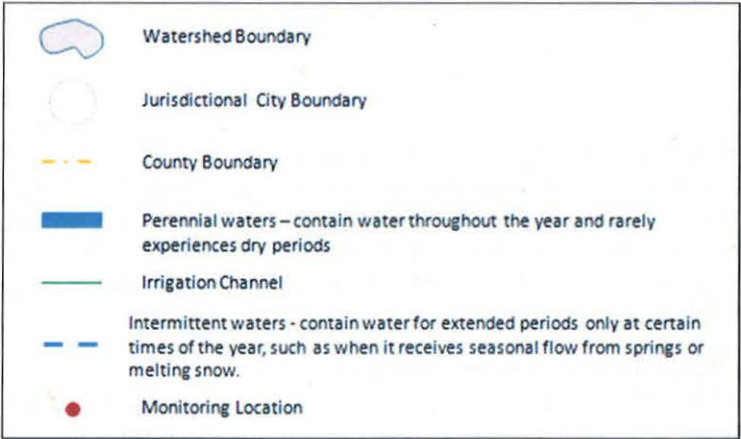
Advisory Council on Historic Preservation, 1100 Pennsylvania Avenue, NW., Suite 803,
Washington, DC 20004 Telephone: (202) 606-8503, Fax: (202) 606-8647/8672, E-mail:
achp@achp.gov

Appendix D - Suggested Initial Phase Sampling Location Concepts – Wet Weather Monitoring





Option B: Cooperative Monitoring



Appendix E - Providing Comments or Requesting a Public Hearing on an MS4 Operator's NOI

NOTE: Appendix E is for public information only and does not impose conditions on the permittee.

Any interested person may provide comments or request a public hearing on a Notice of Intent (NOI) submitted under this general permit. The general permit itself is not reopened for comment during the period an NOI is available for review and comment.

A. How Will I Know A MS4 is Filing an NOI and How Can I Get a Copy?

The permittee is required to provide a local public notice that they are filing an NOI and make a copy of the draft NOI submittal available locally. EPA will put basic information from all NOIs received on the Internet at:

<http://www.epa.gov/region6/6wq/npdes/sw/sms4/index.htm> . You may contact the listed MS4 representative for local access to the NOI. You may also request a copy from EPA by contacting [Ms. Dorothy Brown](mailto:brown.dorothy@epa.gov) at 214-665-8141 or brown.dorothy@epa.gov or via mail at the Address in Item D below, attention Dorothy Brown.

B. When Can I File Comments or a Hearing Request?

You can file comments and/or request a hearing as soon as a NOI is filed, but your request must be postmarked or physically received by EPA within thirty (30) calendar days of the date the NOI is posted on the web site in Section A.

C. How Do I File Comments or Make My Hearing Request?

Your comments and/or hearing request must be in writing and must state the nature of the issues proposed to be raised in the hearing. You should be as specific as possible and include suggested remedies where possible. You should include any data supporting your position(s). If you are submitting the request on behalf of a group or organization, you should describe the nature and membership of the group or organization. Electronic format comments in MS-WORD or PDF format are preferred.

D. Where Do I Send Copies of My Comments or Hearing Request?

Electronic Format: Submit one copy of your comments or hearing request via e-mail to Ms. Dorothy Brown at brown.dorothy@epa.gov and copy the Operator of the MS4 at the address on the NOI (send hard copy to MS4 Operator if no e-mail address provided). You may also submit via compact disk or diskette formatted for PCs to addresses for hard copy below. (Hard Copy: You must send an original and one copy of your comments or hearing request to EPA at the address below and a copy to the Operator of the MS4 at the address provided on the NOI)

U.S. EPA Region 6
Water Quality Protection Division (6WQ-NP)
Attn: Dorothy Brown
1445 Ross Ave., Suite 1200
Dallas, TX 75202

E. How Will EPA Determine Whether or Not To Hold a Public Hearing?

EPA will evaluate all hearing requests received on an NOI to determine if a significant degree of public interest exists and whether issues raised may warrant clarification of the MS4 Operator's NOI submittal. EPA will hold a public hearing if a significant amount of public interest is evident. EPA may also, at the Agency's discretion, hold either a public hearing or an informal public meeting to clarify issues related to the NOI submittal. EPA may hold a single public hearing or public meeting covering more than one MS4 (e.g., for all MS4s in an Urbanized Area, etc.).

F. How Will EPA Announce a Public Hearing or Public Meeting?

EPA will provide public notice of the time and place for any public hearing or public meeting in a major newspaper with local distribution and via the Internet at <http://www.epa.gov/region6/6wq/npdes/sw/sms4/index.htm>.

G. What Will EPA Do With Comments on an NOI?

EPA will take all comments made directly or in the course of a public hearing or public meeting into consideration in determining whether or not the MS4 that submitted the NOI is appropriately covered under the general permit. The MS4 operator will have the opportunity to provide input on issues raised. The Director may require the MS4 operator to supplement or amend the NOI submittal in order to be authorized under the general permit or may direct the MS4 Operator to submit an individual permit application. A summary of issues raised and EPA's responses will be made available online at <http://www.epa.gov/region6/6wq/npdes/sw/sms4/index.htm>. A hard copy may also be requested by contacting Ms. Dorothy Brown (see paragraph D)

Appendix F - Minimum Quantification Levels (MQL's)

The following Minimum Quantification Levels (MQL's) are to be used for reporting pollutant data for NPDES permit applications and/or compliance reporting.

POLLUTANTS	MQL µg/l	POLLUTANTS	MQL µg/l
METALS, RADIOACTIVITY, CYANIDE and CHLORINE			
Aluminum	2.5	Molybdenum	10
Antimony	60	Nickel	0.5
Arsenic	0.5	Selenium	5
Barium	100	Silver	0.5
Beryllium	0.5	Thallium	0.5
Boron	100	Uranium	0.1
Cadmium	1	Vanadium	50
Chromium	10	Zinc	20
Cobalt	50	Cyanide	10
Copper	0.5	Cyanide, weak acid dissociable	10
Lead	0.5	Total Residual Chlorine	33
Mercury (*)	0.0005 0.005		
DIOXIN			
2,3,7,8-TCDD	0.00001		
VOLATILE COMPOUNDS			
Acrolein	50	1,3-Dichloropropylene	10
Acrylonitrile	20	Ethylbenzene	10
Benzene	10	Methyl Bromide	50
Bromoform	10	Methylene Chloride	20
Carbon Tetrachloride	2	1,1,2,2-Tetrachloroethane	10
Chlorobenzene	10	Tetrachloroethylene	10
Chlorodibromomethane	10	Toluene	10
Chloroform	50	1,2-trans-Dichloroethylene	10
Dichlorobromomethane	10	1,1,2-Trichloroethane	10
1,2-Dichloroethane	10	Trichloroethylene	10
1,1-Dichloroethylene	10	Vinyl Chloride	10
1,2-Dichloropropane	10		
ACID COMPOUNDS			
2-Chlorophenol	10	2,4-Dinitrophenol	50
2,4-Dichlorophenol	10	Pentachlorophenol	5
2,4-Dimethylphenol	10	Phenol	10
4,6-Dinitro-o-Cresol	50	2,4,6-Trichlorophenol	10

POLLUTANTS	MQL µg/l	POLLUTANTS	MQL µg/l
BASE/NEUTRAL			
Acenaphthene	10	Dimethyl Phthalate	10
Anthracene	10	Di-n-Butyl Phthalate	10
Benzidine	50	2,4-Dinitrotoluene	10
Benzo(a)anthracene	5	1,2-Diphenylhydrazine	20
Benzo(a)pyrene	5	Fluoranthene	10
3,4-Benzofluoranthene	10	Fluorene	10
Benzo(k)fluoranthene	5	Hexachlorobenzene	5
Bis(2-chloroethyl)Ether	10	Hexachlorobutadiene	10
Bis(2-chloroisopropyl)Ether	10	Hexachlorocyclopentadiene	10
Bis(2-ethylhexyl)Phthalate	10	Hexachloroethane	20
Butyl Benzyl Phthalate	10	Indeno(1,2,3-cd)Pyrene	5
2-Chloronaphthalene	10	Isophorone	10
Chrysene	5	Nitrobenzene	10
Dibenzo(a,h)anthracene	5	n-Nitrosodimethylamine	50
1,2-Dichlorobenzene	10	n-Nitrosodi-n-Propylamine	20
1,3-Dichlorobenzene	10	n-Nitrosodiphenylamine	20
1,4-Dichlorobenzene	10	Pyrene	10
3,3'-Dichlorobenzidine	5	1,2,4-Trichlorobenzene	10
Diethyl Phthalate	10		
PESTICIDES AND PCBS			
Aldrin	0.01	Beta-Endosulfan	0.02
Alpha-BHC	0.05	Endosulfan sulfate	0.02
Beta-BHC	0.05	Endrin	0.02
Gamma-BHC	0.05	Endrin Aldehyde	0.1
Chlordane	0.2	Heptachlor	0.01
4,4'-DDT and derivatives	0.02	Heptachlor Epoxide	0.01
Dieldrin	0.02	PCBs **	0.2
Alpha-Endosulfan	0.01	Toxaphene	0.3

(MQL's Revised November 1, 2007)

- (*) Default MQL for Mercury is 0.005 unless Part I of your permit requires the more sensitive Method 1631 (Oxidation / Purge and Trap / Cold vapor Atomic Fluorescence Spectrometry), then the MQL shall be 0.0005.
- (**) EPA Method 1668 should be utilized when PCB water column monitoring is conducted to determine compliance with permit requirements. Either the Arochlor test (EPA Method 8082) or USGS test method (8093) may be utilized for purposes of sediment sampling as part of a screening program, but must use EPA Method 1668 (latest revision) for confirmation and determination of specific PCB levels at that location.

Appendix G – Oxygen Saturation and Dissolved Oxygen Concentrations North Diversion Channel Area

Concentrations of dissolved oxygen in water at various atmospheric pressures and temperatures with 100 percent oxygen saturation, 54.3 percent oxygen saturation (associated with hypoxia and harassment of silvery minnows), and 8.7 percent oxygen saturation (associated with anoxia and lethality of silvery minnows) at the North Diversion Channel (NDC) (based on USGS DO website <<http://water.usgs.gov/software/DOTABLES/>> for pressures between 628 to 648 millimeters of mercury (Hg)). Source: Biological Consultation Cons. #22420-2011-F-0024-R001

Water temp. ("C)	100% Oxygen Saturation at NDC			54.3% saturation = Harassmen			8.7% saturation= 50%Lethality		
	628mmHg	638mmHg	648mmHg	628mmHg	638mmHg	648mmHg	628mmHg	638mmHg	648mmHg
0	12.1	12.3	12.5	6.6	6.7	6.8	1.1	1.1	1.1
1	11.7	11.9	12.1	6.4	6.5	6.6	1.0	1.0	1.1
2	11.4	11.6	11.8	6.2	6.3	6.4	1.0	1.0	1.0
3	11.1	11.3	11.5	6.0	6.1	6.2	1.0	1.0	1.0
4	10.8	11	11.2	5.9	6.0	6.1	0.9	1.0	1.0
5	10.5	10.7	10.9	5.7	5.8	5.9	0.9	0.9	0.9
6	10.3	10.4	10.6	5.6	5.8	5.0	0.9	0.9	0.9
7	10	10.2	10.3	5.4	5.5	5.6	0.9	0.9	0.9
8	9.8	9.9	10.1	5.3	5.4	5.5	0.9	0.9	0.9
9	9.5	9.7	9.6	5.2	5.3	5.3	0.8	0.8	0.9
10	9.3	9.5	9.6	5.0	5.2	5.2	0.8	0.8	0.8
11	9.1	9.2	9.4	4.9	5.0	5.1	0.8	0.8	0.8
12	8.9	9	9.2	4.8	4.9	5.0	0.8	0.8	0.8
13	8.7	8.8	9	4.7	4.8	4.9	0.8	0.8	0.8
14	8.5	8.6	8.8	4.8	4.7	4.8	0.7	0.7	0.0
15	8.3	8.4	8.8	4.5	4.6	4.7	0.7	0.7	0.7
16	8.1	8.3	8.4	4.4	4.5	4.6	0.7	0.7	0.7
17	8	8.1	8.2	4.3	4.4	4.5	0.7	0.7	0.7
18	7.8	7.9	8	4.2	4.3	4.3	0.7	0.7	0.7
19	7.6	7.8	7.9	4.1	4.2	4.3	0.7	0.7	0.7
20	7.5	7.6	7.7	4.1	4.1	4.2	0.7	0.7	0.7
21	7.3	7.4	7.6	4.0	4.0	4.1	0.6	0.6	0.7
22	7.2	7.3	7.4	3.9	4.0	4.0	0.6	0.6	0.6
23	7	7.2	7.3	3.8	3.9	4.0	0.6	0.6	0.6
24	6.9	7	7.1	3.7	3.8	3.9	0.6	0.6	0.6
25	6.8	6.9	7	3.7	3.7	3.6	0.6	0.6	0.6
26	6.7	6.8	6.9	3.6	3.7	3.7	0.6	0.6	0.6
27	6.5	6.6	6.8	3.5	3.6	3.7	0.6	0.6	0.8
28	6.4	6.5	6.6	3.5	3.5	3.6	0.6	0.8	0.8
29	6.3	6.4	6.5	3.4	3.5	3.5	0.5	0.6	0.8
30	6.2	6.3	6.4	3.4	3.4	3.5	0.5	0.5	0.8
31	6.1	6.2	6.3	3.3	3.4	3.4	0.5	0.5	0.8
32	6	6.1	6.2	3.3	3.3	3.4	0.5	0.5	0.5
33	5.9	6	6.1	3.2	3.3	3.3	0.5	0.5	0.5
34	5.8	5.9	6	3.1	3.2	3.3	0.5	0.5	0.5
35	5.7	5.6	5.9	3.1	3.1	3.2	0.5	0.5	0.5

**APPENDIX B –
AMAFCA's EPA APPROVAL / AUTHORIZATION FOR
PERMIT COVERAGE & NOTICE OF INTENT (NOI)**



Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority

2600 Prospect N.E., Albuquerque, NM 87107
Phone: (505) 884-2215 Fax: (505) 884-0214
Website: www.amafca.org

October 15, 2019

Mr. Robert Houston
Chief, Special Projects Section
U.S. Environmental Protection Agency, Region 6
1201 Elm Street, Suite 500
Dallas, Texas 75270

RE: NPDES Permit No. NMR04A000 Administrative Continuance – Duty to Re-Apply

Dear Mr. Houston:

This correspondence serves as a written notification that the members copied below of the Middle Rio Grande Technical Advisory Group (TAG) will continue to operate and discharge into the Rio Grande under the coverage and the conditions set forth in NPDES Permit No. NMR04A000 (Permit), after December 19, 2019, based on Permit language in Part IV:V and required notification in Part IV:C.

On June 27, 2019 the Middle Rio Grande TAG MS4 permittees met with and were informed by EPA Region 6 staff Brent Larson & Maria Martinez that the Permit, which expires on December 19, 2019, would likely go into administrative continuance. As EPA staff explained during the meeting, EPA is not required to issue a public notice related to the administrative continuance and the current permittees do not need to complete any actions or submit renewal applications to have continued coverage under the current Permit.

This guidance from EPA was confirmed in the Permit, in Part IV:V. CONTINUATION OF THE EXPIRED GENERAL PERMIT. *If this Permit is not reissued or replaced prior to the expiration date, it will be administratively continued in accordance with the Administrative Procedures Act and remain in force and effect. Any permittee who was granted permit coverage prior to the expiration date will automatically remain covered by the continued Permit until the earlier of:*

- 1. Reissuance or replacement of this Permit, at which time the permittee must comply with the Notice of Intent conditions of the new permit to maintain authorization to discharge; or*
- 2. Issuance of an individual permit for your discharges; or*
- 3. A formal permit decision by the permitting authority not to reissue this general Permit, at which time the permittee must seek coverage under an alternative general permit or an individual permit.*

Closer review of the Permit noted the language in Part IV:C: DUTY TO REAPPLY. *If the permittee wishes to continue an activity regulated by this Permit after the Permit expiration date, the permittee must apply for and obtain a new permit. The application shall be submitted at least 180 days prior to expiration of this permit. The EPA may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date. Continuation of expiring permits shall be governed by regulations promulgated at 40 CFR § 122.6 and any subsequent amendments.* It is unclear from the Permit language in Part IV: C, if this section applies to permits that are administratively continued.

This letter is to inform EPA that, based on the provided guidance from EPA and the MS4 Permit language in Part IV:V, members of the Middle Rio Grande TAG will continue to operate with coverage under the current MS4 Permit when the Permit is administratively continued on December 19, 2019. If these assumptions are incorrect or if an application is required for continued coverage under MS4 Permit NMR04A000, please let us know as soon as possible.

We appreciate your attention to this matter. Please contact me if you have any questions.

Sincerely,
Middle Rio Grande TAG

A handwritten signature in blue ink, reading "Patrick A. Chavez".

Patrick Chavez, PE
AMAFCA Storm Water Quality Engineer and TAG Member

TAG Members Included and Copied:

Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA)
City of Rio Rancho
Sandia National Labs (operated by NTESS for US DOE)
Bernalillo County
Kirtland Air Force Base
Village of Los Ranchos
Eastern Sandoval County Arroyo Flood Control Authority (ESCACA)
Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA)
City of Albuquerque
Village of Corrales
Sandoval County
Town of Bernalillo
New Mexico Department of Transportation (NMDOT)
University of New Mexico



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 6

**1445 Ross Avenue, Suite 1200
Dallas, Texas 75202 - 2733**

February 12, 2016

CERTIFIED MAIL: RETURNED RECEIPT REQUESTED (7014 0150 0000 2452 4007)

Mr. Jerry Lovato
Albuquerque Metropolitan Arroyo
Flood Control Authority
2600 Prospect Avenue NE
Albuquerque, NM 87107

Ref: Coverage under Middle Rio Grande (MRG) Watershed Based Municipal Sewer Separate Storm
Sewer System General Permit (NPDES No. NMR04A000)

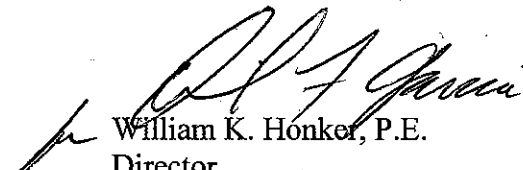
Permit Tracking Number: NMR04A016

Dear Mr. Lovato:

The Environmental Protection Agency (EPA) has reviewed your Notice of Intent (NOI) submittal and found it to be technically complete and has provided an opportunity for the public to review your NOI and other related documents prior to permit authorization becoming effective. No comments were received from the public during the public comment period. Authorization under this permit and duty to comply is effective as of the date of this letter.

Please contact Nelly Smith via email at Smith.Nelly@epa.gov or phone at (214) 665-7109 if you have questions or concerns regarding your coverage or the requirements included in the MRG MS4 General Permit.

Sincerely,

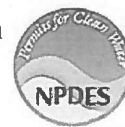

William K. Honker, P.E.
Director
Water Division

cc: Bruce Yurdin, Manager, Point Source Regulation Section, NMED
Sarah Holcomb, Industrial and Stormwater Team Supervisor, NMED

NOTICE OF INTENT



National Pollutant Discharge Elimination System Stormwater Program MS4 Notice of Intent Format



Check box if you are submitting an individual NOI with one or more cooperative program elements. ☒

Check box if you are submitting an individual NOI with individual program elements only. ☐

Check box if your municipality or organization was previously covered under a MS4 permit. ☒

Please indicate the permittee class type: (Note: The definition of the permittee class type is located in Table 1 of Part I.B.1.)

☒ A (Phase I) ☐ B (Phase II) ☐ C (New Phase II) ☐ D (MS4s within Indian Lands)

I. MS4(s) Information

A. General Information

Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA)

Name of MS4

Jerry

Name of Contact Person (First)

Lovato

(Last)

Executive Engineer

(Title)

505-884-2215

Telephone (including area code)

jlovato@amafca.org

Email

2600 Prospect Avenue NE

Mailing Address

Albuquerque

City

NM

State

87107

ZIP code

What size population does your MS4(s) serve? 627,000

The operator is: ☐ Federal ☐ State ☐ Tribal ☒ other public (check one)

B. In what urbanized area (UA), the MS4 is located in:

Farmington UA ☐
Santa Fe UA ☐
Albuquerque UA ☒
Los Lunas UA ☐
Las Cruces UA ☐
El Paso UA ☐

C. If not located in an UA, the MS4 is located in:

Core Municipality
Indian Reservation/Pueblo
County(ies)
Cluster

D. Is this a Phase I MS4? ☒ Yes ☐ No

Is this a Non-traditional MS4? ☒ Yes ☐ No

If so, Check one: ☐ Dept. of Transportation ☒ Flood Control Authority ☐ University

Other - Specify

What is the Latitude and longitude of the approximate center of the MS4?

Latitude Longitude

II. Eligibility Determination

A. Receiving Water(s) Information

Does the MS4 discharge to any waters for which an TMDL applicable to discharges from the MS4 has been approved? (See Part I.A.5.f) ☒ Yes ☐ No ☐ NA

The receiving water(s) are:

	<i>State or Tribal Segment ID</i>	<i>Approved TMDL</i>	<i>TMDL assigns WLA to MS4</i>
Rio Grande (Isleta Pueblo Boundary to Alamogordo)	20.6.4.105	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Rio Grande (non-Pueblo Alameda to Angostura)	20.6.4.106	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<input type="text"/>	<input type="text"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="text"/>	<input type="text"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="text"/>	<input type="text"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

Is the MS4 (or a group of MS4s) seeking an alternative sub-measurable goal for TMDL controls under Part I.C.2.b.(i).(c).B? ☒ Yes ☐ No ☐ NA

If so, the MS4 or a group of MS4s must submit a preliminary proposal with the NOI to EPA and NMED (see Part I.B.2.k, Section B.2 in Appendix B and Part III.D.4). This proposal should include, but is not limited to, the elements included in Appendix B under Section B.2 of the permit

If the MS4 discharges to a receiving water for which EPA has approved or developed a TMDL, describe how the eligibility requirements of Part I.A.5.f and Part I.C.2. have been met :

AMAFCA continues to review and revise its bacteria (E. coli) reduction program. The program will continue to focus on reducing bacteria from the three largest contributors identified in the 2005 Middle Rio Grande

Microbial Source Tracking Study. These largest contributors are avian (34%), canine (22%) and human (16%). AMAFCA has a new study, "Rio Grande Bacteria Investigation," which includes an analysis of E.coli data,

research on the pathogenicity and a survey of BMPs used nationwide.

For additional information, see AMAFCA DRAFT Stormwater Management Plan (SWMP) dated October 26, 2015 - pages 25-32

B. Is the MS4 partially located on Indian Country lands? ☒ Yes ☐ No

If so, the Indian Country Lands include the following: (NOTE: MS4s straddling State and Indian Country land boundaries will be issued authorization under all applicable permits and may have additional State or Tribal-specific requirements applicable to different areas of the MS4 - see Part VIII and initial notification under Part III.D.4)

AMAFCA's jurisdiction specifically excludes Pueblo Lands. However, AMAFCA maintains the North Diversion Channel, the outfall of which is located within a drainage easement on the Pueblo of Sandia.

C. Is the permit in compliance with the National Historic Preservation Act (NHPA)? ☒ Yes ☐ No

In order to be eligible for coverage under this permit, the MS4 operator must meet one of the following criteria: (Please check which criterion the MS4 is eligible under)

Criterion A: storm water discharges, allowable non-storm water discharges, and discharge-related activities do not affect a property that is listed or is eligible for listing on the National Register of Historic Places as maintained by the Secretary of the Interior. ☒

Criterion B: the applicant has obtained and is in compliance with a written agreement with the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO) (or equivalent tribal authority) that outlines all measures the MS4 operator will undertake to mitigate or prevent adverse effect to the historic property. ☐

Provide a brief summary of the basis for the criterion selected above:

AMAFCA facilities do not discharge to properties listed on the National Register of Historic Places.

III. Preliminary Description of the Proposed Stormwater Program

As applicable, use Sections 1 through 8 below to describe the storm water management program (SWMP), including best management practices (BMPs) or storm water controls that will be implemented and the measurable goals for each of the storm water minimum control measures specified in Part I.D.5 of this permit, the month and year in which the MS4 operator will start and fully implement each of the minimum control measures or the frequency of the action, the name of the person(s) or position(s) responsible for implementing or coordinating the SWMP.

If the MS4 operator is participating in cooperative programs with other parties (or is relying on another governmental entity) to satisfy one or more permit obligations (see Part I.D.3), use the space provided under **Cooperative Elements** to identify the partners and briefly describe roles and responsibilities.

NOTE:

The space provided in the fields below (255 characters) should be used to briefly describe proposed BMPs and corresponding measurable goals. Individual boxes should be used to describe individual target activities. If additional space is required to describe target activities, the MS4(s) should attach such as information with the NOI using the format provided.

Section 1. Construction Site Stormwater Runoff Control – Proposed BMPS, Stormwater Controls, and Measurable Goals

1.1. Development of an ordinance or other regulatory mechanism as required in Part I.D.5.a.(ii)(a)

Because AMAFCA is strictly a flood control authority, the legal authority and jurisdiction granted to it by the state is limited. As a result, AMAFCA is unable to develop, implement, and enforce ordinances, regulatory

mechanisms, and requirements for construction site operators as required by this section. However, to the extent permitted by law, AMAFCA will comply with the requirements of this section.

For additional information, see AMAFCA DRAFT Stormwater Management Plan (SWMP) dated October 26, 2015 - page 47

Cooperative Elements

For additional information, see AMAFCA DRAFT Stormwater Management Plan (SWMP) dated October 26, 2015 - page 47

1.2. Develop requirements and procedures as required in Part I.D.5.a.(ii)(b) through in Part I.D.5.a.(ii)(h)

Because AMAFCA is strictly a flood control authority, the legal authority and jurisdiction granted to it by the State is limited. As a result, AMAFCA is unable to develop, implement, and enforce ordinances, regulatory

mechanisms, and requirements for construction site operators as required by this section. However, to the extent permitted by law, AMAFCA will comply with the requirements of this section.

For additional information, see AMAFCA DRAFT Stormwater Management Plan (SWMP) dated October 26, 2015 - page 48

Cooperative Elements

For additional information, see AMAFCA DRAFT Stormwater Management Plan (SWMP) dated October 26, 2015 - page 48

1.3. Annually conduct site inspections of 100 percent of all construction projects cumulatively disturbing one (1) or more acres as required in Part I.D.5.a.(iii)

AMAFCA will continue to conduct site inspections of 100 percent of AMAFCA construction projects which disturb at least one acre. At a minimum, each project will be inspected once annually during construction

(including follow-up inspections for any non-conformances) and at the NOT.

Cooperative Elements

AMAFCA partners with other MS4s, such as City of Albuquerque, UNM, ExpoNM, on construction projects. AMAFCA will continue to coordinate with those cooperating MS4s in order to assign responsibility of

conducting site inspections. AMAFCA is also a member of the cooperative, called the MS4 Technical Advisory Group (MS4 TAG).

1.4. Coordinate with all departments and boards with jurisdiction over the planning, review, permitting, or approval of public and private construction projects/activities within the permit area as required in Part I.D.5.a.(iv)

AMAFCA does not have jurisdiction over the planning, review, permitting or approval of non-AMAFCA public and private construction activities. Therefore, AMAFCA's program is limited to AMAFCA-owned projects.

Regular coordination will continue to occur amongst AMAFCA engineering staff to verify that BMPs are in place to control erosion during construction.

For additional information, see AMAFCA DRAFT Stormwater Management Plan (SWMP) dated October 26, 2015 - page 50

Cooperative Elements

Not applicable to AMAFCA.

1.5. Evaluation of GI/LID/Sustainable practices in site plan reviews as required in Part I.D.5.a.(v)

AMAFCA does not have jurisdiction over site plan reviews of public and private construction activities and AMAFCA does not program any development type projects. AMAFCA will continue to encourage the use of sustainable practices during

the review phase of projects within AMAFCA's right-of-ways and turn-key projects that AMAFCA will take over for operation and maintenance after construction.

Cooperative Elements

AMAFCA will encourage an evaluation of sustainable GI/LID practice opportunities within the watershed.

1.6. Enhance the program to include program elements in Part I.D.5.a.(viii) through Part I.D.5.a.(x)

AMAFCA continues to use storm water educational materials, either locally developed or provided by the EPA, NMED, environmental, public interest or trade organizations and/or other MS4s. AMAFCA will work with


other MS4s to evaluate the need to update the 2012 Storm Water Management Guidelines for Construction and Industrial Activities. AMAFCA will continue to incorporate a screening prioritization process for inspections.

Cooperative Elements

The 2012 Storm Water Management Guidelines for Construction & Industrial Activities is coauthored by AMAFCA, NMED, NMDOT, City of Albuquerque, UNM, City of Rio Rancho, SCAFCA, and Bernalillo County.

AMAFCA will continue to host training sessions to the MS4s, for example the NMED provided training at AMAFCA for all the MS4s regarding the Construction General Permit, SWPPPs, NOI, BMPs and inspections.

1.7. Describe other proposed activities to address the Construction Site Stormwater Runoff Control Measure:

AMAFCA had Diana McDonald perform a self-audit on the AMAFCA Water Quality Program and identify areas of improvement, as well as recommend changes to the program in order to comply with the Watershed Based Permit. 

Section 2. Post-Construction Stormwater Management in New Development and Redevelopment – Proposed BMPs, Stormwater Controls, and Measurable Goals

2.1. Development of strategies as required in Part I.D.5.b.(ii).(a)

Because AMAFCA is strictly a flood control authority, the legal authority and jurisdiction granted to it by the State of New Mexico is limited.

AMAFCA will continue to include both structural and non-structural BMPs to control pollutants in stormwater runoff from AMAFCA owned facilities.

Cooperative Elements

AMAFCA will develop strategies where feasible to contractually require post-construction BMPS on turn-key projects that AMAFCA will take over for operation and maintenance after construction.

2.2. Development of an ordinance or other regulatory mechanism as required in Part I.D.5.b.(ii).(b)


Because AMAFCA is strictly a flood control authority, the legal authority and jurisdiction granted to it by the State of New Mexico is limited.
AMAFCA will develop strategies to contractually address post-construction peak flow runoff from new development and redevelopment projects within AMAFCA's jurisdiction and/or right of ways
to the extent allowable under State, Tribal or local law.

Cooperative Elements

AMAFCA will develop strategies where feasible to contractually address post-construction peak flow runoff on turn-key projects that AMAFCA will take over for operation and maintenance after construction.

2.3. Implementation and enforcement, via the ordinance or other regulatory mechanism, of site design standards as required in Part I.D.5.b.(ii).(b).

Because AMAFCA is strictly a flood control authority, the legal authority and jurisdiction granted to it by the State is limited.

AMAFCA will contractually require addressing post-construction peak flow runoff from new development and redevelopment projects within AMAFCA's jurisdiction and/or right of ways to the extent allowable under State, Tribal or local law. 

Cooperative Elements

AMAFCA will contractually require addressing post-construction peak flow runoff on turn-key projects that AMAFCA will take over for operation and maintenance after construction within AMAFCA's jurisdiction and/or right of ways 

to the extent allowable under State, Tribal or local law.

2.4. Ensure appropriate implementation of structural controls as required in Part I.D.5.b.(ii).(c) and Part I.D.5.b.(ii).(d)

AMAFCA will continue to ensure the appropriate implementation of structural BMPs through: pre-construction design review, inspection during construction, post-construction inspection and maintenance,

penalty provisions for construction noncompliance, and ineffective operation and maintenance. These items are specifically discussed weekly in the AMAFCA staff meetings and the project schedule meetings.


Cooperative Elements

AMAFCA partners with other MS4's, such as City of Albuquerque, UNM, ExpoNM, on construction of structural BMPs. AMAFCA is also a member of the MS4 TAG cooperative group.

2.5. Develop procedures as required in Part I.D.5.b.(ii).(e), Part I.D.5.b.(ii).(f), Part I.D.5.b.(ii).(g), and Part I.D.5.b.(ii).(h)

AMAFCA contributes to the MRGSQT, which includes training on GI/LID and sustainability practices. This is achieved by sponsoring conferences featuring GI/LID lectures, such as the Land and Water Summit.

Cooperative Elements

AMAFCA will continue to participate in the cooperative called the Middle Rio Grande Storm Water Quality Team (MRGSQT), along with the City of Albuquerque, NMDOT, SSCAFCA, City of Rio Rancho, Sandoval County and Town of Bernalillo. 

2.6. Coordinate internally with all departments and boards with jurisdiction over the planning, review, permitting, or approval of public and private construction projects/activities within the permit area as required in Part I.D.5.b.(iii)

AMAFCA will coordinate with all entities as necessary, however, AMAFCA does not have any internal departments or boards with jurisdiction over these matters.

For additional information, see AMAFCA DRAFT Stormwater Management Plan (SWMP) dated October 26, 2015 - page 56

Cooperative Elements

For additional information, see AMAFCA DRAFT Stormwater Management Plan (SWMP) dated October 26, 2015 - page 56

2.7. As required in Part I.D.5.b.(iv), the permittee must assess all existing codes, ordinances, planning documents and other applicable regulations, for impediments to the use of GI/LID/Sustainable practices


Because AMAFCA is strictly a flood control authority, the legal authority and jurisdiction granted to it by the State is limited.

AMAFCA will assess existing codes, ordinances, planning documents and other applicable regulations for impediments to the use of GI/LID/Sustainable practices.

Cooperative Elements

AMAFCA is a member of the TAG cooperative that assesses by discussion existing codes, ordinances, planning documents and other applicable regulations for impediments to the use of GI/LID/Sustainable practices.

2.8. As required in Part I.D.5.b.(iv), describe the plan to report the assessment findings on GI/LID/Sustainable practices

Because AMAFCA is strictly a flood control authority, the legal authority and jurisdiction granted to it by the State is limited. As a result, AMAFCA is unable to enact codes, ordinances, and other regulatory mechanisms set forth herein. 

However, to the extent permitted by law, AMAFCA will comply with the requirements of this section.

For additional information, see AMAFCA DRAFT Stormwater Management Plan (SWMP) dated October 26, 2015 - page 57

Cooperative Elements


Not applicable to AMAFCA.

2.9. Estimation of the number of acres of IA and DCIA as required in Part I.D.5.b.(vi)

AMAFCA will estimate the IA and DCIA within AMAFCA's jurisdiction and/or right of way.

Cooperative Elements

2.10. Inventory and priority ranking as required in section in Part I.D.5.b.(vii)

AMAFCA will continue to meet with MS4s to discuss areas requiring drainage and water quality retrofitting, project priorities, and multi-agency funding. AMAFCA will publish projects, including schedule and cost sharing, 
in the biennial AMAFCA Project Schedule. AMAFCA will evaluate the existing BMPs based on their effectiveness and capacity in order to identify where additional BMPs are needed.

Cooperative Elements

AMAFCA will continue to invite all MS4s to the series of meetings for project planning of infrastructure retrofitting. AMAFCA is also a member of the MS4 TAG cooperative group.

2.11. Incorporate watershed protection elements as required in Part I.D.5.b.(viii)

AMAFCA will continue to produce and publish the biennial AMAFCA Project Schedule for all regional drainage and water quality projects within AMAFCA's jurisdiction that will either be led or partly funded by AMAFCA.

For projects led by AMAFCA, watershed protection elements will be incorporated into drainage management plans, as appropriate, in order to identify watersheds which can be retrofitted with regional WQ Facilities.

Cooperative Elements

AMAFCA will continue to invite all MS4s to the series of meetings for project planning of infrastructure retrofitting. AMAFCA is also a member of the MS4 TAG cooperative group.

2.12. Enhance the program to include program elements in Part I.D.5.b.(xi) and Part I.D.5.b.(xii)


AMAFCA will continue to use storm water educational materials, either locally developed or provided by the EPA, NMED, environmental, public interest or trade organizations and/or other MS4s.

AMAFCA will continue to participate in the watershed-planning efforts with other MS4s in order to publish the AMAFCA Project Schedule biennially.

Cooperative Elements

AMAFCA will continue to participate in the storm water education cooperative called the MRGSQT, along with the City of Albuquerque, NMDOT, SSCAFCA, City of Rio Rancho, Sandoval County and Town of Bernalillo.

2.13. Describe other proposed activities to address the Post-Construction Stormwater Management in New Development and Redevelopment Measure:

Because AMAFCA is strictly a flood control authority, the legal authority and jurisdiction granted to it by the State of New Mexico is limited. As a result, AMAFCA is unable to enact codes, ordinances, and other regulatory mechanisms set forth herein. 

AMAFCA will begin development of procedures, as appropriate, to insert MS4 Permit elements into construction contracts to provide AMAFCA with a regulatory mechanism.

Section 3. Pollution Prevention/Good Housekeeping for Municipal/Co-permittee Operations – Proposed BMPs, Stormwater Controls, and Measurable Goals

3.1. Develop or update the Pollution Prevention/Good House Keeping program to include the elements in Part I.D.5.c.(i)


AMAFCA plans to continue its Pollution Prevention/Good Housekeeping Program. We recently had a consultant inspect our office, maintenance yard and staging areas within our jurisdiction. We are in the

process of implementing changes to improve the AMAFCA Program based on the recommendations provided in the inspection report. Our yard expansion project will include additional structural controls.

Cooperative Elements

AMAFCA is cooperating with the City of Albuquerque regarding staff training-- The City has agreed to share training materials and programs with AMAFCA. AMAFCA is also a member of the MS4 TAG cooperative group.

3.2. Enhance the program to include the elements in Part I.D.5.c.(ii)

AMAFCA will comply with this requirement to the extent it is permitted by law and/or this section is applicable to AMAFCA. AMAFCA will continue to update the existing list of storm water quality facilities by drainage basin. 

AMAFCA will continue to assess existing flood control infrastructure for retrofitting for additional pollutant removal.

Cooperative Elements

AMAFCA will continue to cooperate with MS4s within its jurisdiction to assess flood control infrastructure for retrofitting with water quality BMPs. AMAFCA is also a member of the MS4 TAG cooperative group.

3.3. Develop or update a list and a map of industrial facilities owned or operated by the permittee as required in Part I.D.5.c.(iii)

AMAFCA does not own or operate any industrial facilities, and this section is therefore inapplicable.

Cooperative Elements

Not applicable to AMAFCA.

3.4. Describe other proposed activities to address the Pollution Prevention/Good Housekeeping for Municipal/permittee Operations Measure:

AMAFCA recently had a field inspection performed of its maintenance yard and staging areas throughout its jurisdiction. AMAFCA is in the process of implementing administrative and structural changes as a result of

the recommendations provided in the inspection report.

Section 4: Industrial and High Risk Runoff – Proposed BMPs, Stormwater Controls, and Measurable Goals (APPLICABLE ONLY TO CLASS A PERMITTEES)

4.1. Ordinance (or other control method) as required in Part I.D.5.d.(i)

Because AMAFCA is strictly a flood control authority, the legal authority and jurisdiction granted to it by the State is limited. As a result, AMAFCA is unable to develop, implement, and enforce any ordinances or

regulatory mechanisms required by this section.

Cooperative Elements

Not applicable to AMAFCA

4.2. Continue implementation and enforcement of the Industrial and High Risk Runoff program, assess the overall success of the program, and document both direct and indirect measurements of program effectiveness in the annual report as required in Part I.D.5.d.(ii)

AMAFCA does not own or operate any industrial or high risk runoff locations and is without jurisdiction over private entities. As such, AMAFCA is without legal authority to implement the requirements of this section.

Cooperative Elements

Not applicable to AMAFCA.

4.3. Meet the monitoring requirements in Part I.D.5.d.(iii)

AMAFCA does not own or operate any industrial or high risk runoff locations and is without jurisdiction over private entities. As such, AMAFCA is without legal authority to implement the requirements of this section.

Cooperative Elements

Not applicable to AMAFCA.

4.4. Include requirements in Part I.D.5.d.(iv)

AMAFCA does not own or operate any industrial or high risk runoff locations and is without jurisdiction over private entities. As such, AMAFCA is without legal authority to implement the requirements of this section.

Cooperative Elements

Not applicable to AMAFCA.

4.5. Enhance the program to include requirements in Part I.D.5.d.(vii)

AMAFCA does not own or operate any industrial or high risk runoff locations and is without jurisdiction over private entities. As such, AMAFCA is without legal authority to implement the requirements of this section.

Cooperative Elements

Not applicable to AMAFCA.

4.6. Describe other proposed activities to address the Industrial and High Risk Runoff Measure:

AMAFCA does not own or operate any industrial or high risk runoff locations and is without jurisdiction over private entities. As such, AMAFCA is without legal authority to implement the requirements of this section.

Section 5. Illicit Discharges and Improper Disposal – Proposed BMPs, Stormwater Controls, and Measurable Goals

5.1. Mapping as required in Part I.D.5.e.(i)(a)

AMAFCA will continue to update its Maintenance Responsibilities for Drainage Facilities in the Albuquerque Metropolitan Area (Map), which illustrates and labels outfalls, water quality BMPs, channels, dams, large

diameter storm drains, and receiving waters within AMAFCA's jurisdiction.

Cooperative Elements

AMAFCA cooperates with the City of Albuquerque, NMDOT, Bernalillo County, and MRGCD to collect their data for AMAFCA's map.

5.2. Ordinance (or other control method) as required in Part I.D.5.e.(i)(b)


Because AMAFCA is strictly a flood control authority, the legal authority and jurisdiction granted to it by the State of New Mexico is limited.

AMAFCA will contractually require the control of non-stormwater discharges from third-party operations within AMAFCA's jurisdiction and/or right of way to the extent allowable under State, Tribal or local law.

Cooperative Elements

AMAFCA will contractually require the control of non-stormwater discharges on turn-key projects that AMAFCA will take over for operation and maintenance after construction to the extent allowable under State, Tribal or local law. 

5.3. Develop and implement a IDDE plan as required in Part I.D.5.e.(i)(c)

AMAFCA will continue to implement its IDDE program. AMAFCA currently has a consultant under contract to evaluate the AMAFCA IDDE program and develop recommendations for improving the program in order to comply with the Watershed- Based Permit. 

Cooperative Elements

AMAFCA is a member of the cooperative, called MS4 Technical Advisory Group (MS4 TAG).

5.4. Develop an education program as required in Part I.D.5.e.(i)(d)

AMAFCA will continue to participate in the storm water education cooperative called the MRGSQT, which provides educational information regarding storm water quality to the community. The MRGSQT promotes,

and publicizes public reporting of illicit discharges and informs the public of hazards associated with illicit discharges and improper waste disposal, as well as proper ways to dispose of hazardous wastes.

Cooperative Elements

AMAFCA will continue to participate in the storm water education cooperative called the MRGSQT, along with the City of Albuquerque, NMDOT, SSCAFCA, City of Rio Rancho, Sandoval County and Town of Bernalillo.

5.5. Establish a hotline as required in Part I.D.5.e.(i)(e)

The City of Albuquerque has established and maintains the metropolitan area 3-1-1 public hotline. AMAFCA intends to continue participating in the 3-1-1 hotline/reporting system. AMAFCA has received good

information from this hotline, which is why it is integral to our IDDE program.

Cooperative Elements

AMAFCA plans to continue cooperating with the City of Albuquerque for the 3-1-1 hotline. AMAFCA is also a member of the MS4 TAG cooperative group.

5.6. Investigate suspected significant/severe illicit discharges as required in Part I.D.5.e.(i)(f)

AMAFCA plans to continue investigating suspected significant/severe illicit discharges within 48 hours of detection/reporting and all other discharges as soon as practicable. AMAFCA plans to continue removing/

treating such discharges as expeditiously as possible and requiring immediate cessation of illicit discharges upon confirmation of responsible parties.

Cooperative Elements

AMAFCA is a member of the MS4 TAG cooperative group.

5.7. Review complaint records and develop a targeted source reduction program as required in Part I.D.5.e.(i)(g)

AMAFCA will continue to review complaint records and enter the illicit discharges into GIS in order to develop a targeted source reduction program for those illicit discharge incidents that have occurred more than twice

in 2 or more years from different locations.

Cooperative Elements

AMAFCA is a member of the MS4 TAG cooperative group.

5.8. Screening of system as required in Part I.D.5.e.(iii) as follows:

AMAFCA will continue screening the entire jurisdiction at least once every 5 years and high priority areas at least once every year in accordance with the permit requirements.

Cooperative Elements

The City of Albuquerque staff perform dry weather screening for overlapping portions of the COA and AMAFCA jurisdiction. Also, AMAFCA is a member of the MS4 TAG cooperative group.

5.9. Develop, update, and implement a Waste Collection Program as required in Part I.D.5.e.(iv)

Public waste collection is the responsibility of the municipalities, and not within the jurisdiction of AMAFCA. AMAFCA will continue to regularly collect waste within its rights of way.

Cooperative Elements

Not applicable to AMAFCA.

5.10. Develop, update and implement a Spill Prevention and Response program to prevent, contain, and respond to spills that may discharge into the MS4 as required in Part I.D.5.e.(v)

AMAFCA will continue its Spill Prevention and Response program, which includes reporting requirements, crew training, spill response materials on hand (in maintenance vehicles), and good housekeeping.

The City of Albuquerque is responsible for spill response within the city limits.

Cooperative Elements

AMAFCA will continue to cooperate with the City of Albuquerque for spill response. Also, AMAFCA is a member of the MS4 TAG cooperative group.

5.11. Enhance the program to include requirements in Part I.D.5.e.(ix)


AMAFCA currently has a consultant under contract to evaluate the AMAFCA IDDE program and develop recommendations for improving the program in order to comply with the Watershed-Based Permit.

The scope includes evaluating the procedures and methodologies described in "IDDE, A Guidance Manual for Program Development and Technical Assessments," for incorporation into AMAFCA's IDDE program.

Cooperative Elements

AMAFCA is a member of the MS4 TAG cooperative group.

5.12. Describe other proposed activities to address the Illicit Discharges and Improper Disposal Measure:

AMAFCA had Diana McDonald perform a self-audit on the AMAFCA Water Quality Program and identify areas of improvement, as well as recommend changes to the program in order to comply with the Watershed-Based Permit. 

Section 6. Control of Floatables Discharges – Proposed BMPs, Stormwater Controls, and Measurable Goals

6.1. Develop a schedule to implement the program as required in Part I.D.5.f.(i)(a)

AMAFCA will continue to implement the Floatables Control program upon the effective date of the Watershed-Based Permit.

Cooperative Elements

AMAFCA will continue to coordinate with the City of Albuquerque relative to structural BMPs within AMAFCA right-of-way. Also, AMAFCA is a member of the MS4 TAG and MRGSWQT cooperative groups.

6.2. Describe the plan to estimate the annual volume of floatables and trash removed from each control facility and characterize the floatable type as required in Part I.D.5.f.(i)(b)


AMAFCA will continue to estimate the annual volume of floatables and trash removed from each control facility and characterize the floatable type. The AMAFCA operations and maintenance staff and

subcontractors track the volume of floatables, sediment, trash, and debris removed from AMAFCA facilities. They also track the location of removal by facility and watershed.

Cooperative Elements

AMAFCA will continue to coordinate with the City of Albuquerque relative to structural BMPs within AMAFCA right-of-way. Also, AMAFCA is a member of the MS4 TAG and MRGSWQT cooperative groups.

6.3. Describe other proposed activities to address the Control of Floatables Discharges Measure:

AMAFCA had Diana McDonald perform a self-audit on the AMAFCA Water Quality Program and identify areas of improvement, as well as recommend changes to the program in order to comply with the Watershed-Based Permit. 

Section 7. Public Education and Outreach on Stormwater Impacts – proposed BMPs, Stormwater Controls, and Measurable Goals

7.1. Develop, revise, implement, and maintain an education and outreach program as required in Part I.D.5.g.(i) and Part I.D.5.g.(ii)

AMAFCA will continue to implement its education and outreach program, including using printed educational materials, keeptheriogrand.org website, signage at select locations, public presentations/events.

The educational messages include proper use or disposal of household hazardous waste, fertilizers, pesticides, motor oil, pet waste, etc.

Cooperative Elements

AMAFCA will continue to participate in the storm water education cooperative called the MRGSQT, along with the City of Albuquerque, NMDOT, SSCAFCA, City of Rio Rancho, Sandoval County and Town of Bernalillo.

7.2. Enhance the program to include requirements in Part I.D.5.g.(v) through Part I.D.5.g.(viii)


AMAFCA will continue to include in its public education and outreach program: GI/LID/Sustainability, litter and pesticide/herbicide reduction, recycling and proper disposal, public hotline for illicit discharge reporting,

classroom education on storm water, sponsor professional conferences with relevant educational presentations, and pet waste education.

Cooperative Elements

AMAFCA will continue to participate in the storm water education cooperative called the MRGSQT, along with the City of Albuquerque, NMDOT, SSCAFCA, City of Rio Rancho, Sandoval County and Town of Bernalillo.

7.3. Describe other proposed activities to address the Public Education and Outreach on Stormwater Impacts Measure:

AMAFCA had Diana McDonald person a self-audit on the AMAFCA Water Quality Program and identify areas of improvement, as well as recommend changes to the program in order to comply with the Watershed-Based Permit. 

Section 8. Public Involvement and Participation – Proposed BMPs, Stormwater Controls, and Measurable Goals

8.1. Develop (or update), implement, and maintain a public involvement and participation plan as required in Part I.D.5.h.(ii) and Part I.D.5.h.(iii)

AMAFCA will continue its Public Involvement and Participation program, including: uploading SWMP and Annual Report on public websites and providing copies to the Pueblos of Sandia and Isleta.

AMAFCA will also continue participating in the MRGSQT, which participates in public events and solicits public participation by way of surveys regarding impacts of public behavior on storm water quality of the Rio Grande.

Cooperative Elements

AMAFCA will continue to participate in the storm water education cooperative called the MRGSQT, along with the City of Albuquerque, NMDOT, SSCAFCA, City of Rio Rancho, Sandoval County and Town of Bernalillo.

8.2. Describe the plan to comply with State, Tribal, and local notice requirements when implementing a Public Involvement and Participation Program as required in Part I.D.5.h.(iv)

AMAFCA will provide hard copies of all MS4 compliance reporting. The SWMP and Annual Reports are also available on the keeptheriogrand.org and amafca.org websites.

Cooperative Elements

AMAFCA will continue to participate in the storm water education cooperative called the MRGSQT, along with the City of Albuquerque, NMDOT, SSCAFCA, City of Rio Rancho, Sandoval County and Town of Bernalillo.

8.3. Describe a plan to include elements as required in Part I.D.5.h.(v)

AMAFCA will continue to include water quality information for the public at events, including public meetings. Where neighborhoods include Spanish-speaking residents AMAFCA may have Spanish-translation

of public meeting announcements and data sheets. The educational videos on the keeptheriogrand.org all have Spanish subtitles.

Cooperative Elements

AMAFCA will continue to participate in the storm water education cooperative called the MRGSQT, along with the City of Albuquerque, NMDOT, SSCAFCA, City of Rio Rancho, Sandoval County and Town of Bernalillo.

8.4. As required in Part I.D.5.h.(viii) provide the internet site (or website) where the SWMP document, Annual Reports, and other documents will be available to the public.

www.amafca.org and keeptheriogrand.org


8.5. Enhance the program to include requirements in Part I.D.5.h.(ix)

AMAFCA will continue to fund groups which include public participation, such as the Boy or Girl Scouts of America, RiverXchange, and the Bosque Ecosystem Monitoring Program. AMAFCA will continue to participate in the 3-1-1 hotline system. 

Cooperative Elements

AMAFCA will continue to participate in the storm water education cooperative called the MRGSQT, along with the City of Albuquerque, NMDOT, SCAFCA, City of Rio Rancho, Sandoval County and Town of Bernalillo.

8.6. Describe other proposed activities to address the Public Involvement and Participation Measure:

AMAFCA had Diana McDonald perform a self-audit on the AMAFCA Water Quality Program and identify areas of improvement, as well as recommended changes to the program in order to comply with the Watershed-Based Permit. 


IV. Proposed Monitoring Program

Indicate wet weather monitoring program preference:

Individual Monitoring Program ☐

Cooperative Monitoring Program ☒

Provide a general description of the propose monitoring program.

AMAFCA will continue to participate in the Storm Water Monitoring and Testing cooperative and invite other MS4s to join. AMAFCA will continue monitoring upstream and downstream of the cooperative MS4s and in the Embayment. 

V. Public Participation


Include a Summary of issues raised in any local public comments received by the MS4 Operator on the draft NOI/SWMP and MS4 operator's responses.

VI. Attachments

Attach a location map showing the boundaries of the MS4 under the applicant's jurisdiction. The map must include streets or other demarcations so that the exact boundaries can be located.

Are other attachments included with the NOI? If so, indicate the title of the document(s).

Maintenance Responsibilities for Drainage Facilities in the Albuquerque Metropolitan Area (Map)

Cooperative agreement for the Middle Rio Grande Storm Water Quality Team, aka Storm Water Team, MRGSQL 

Cooperative agreement for the Middle Rio Grande MS4 Technical Advisory Group (MS4 TAG)

Cooperative agreement for the Storm Water Monitoring and Testing

VII. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

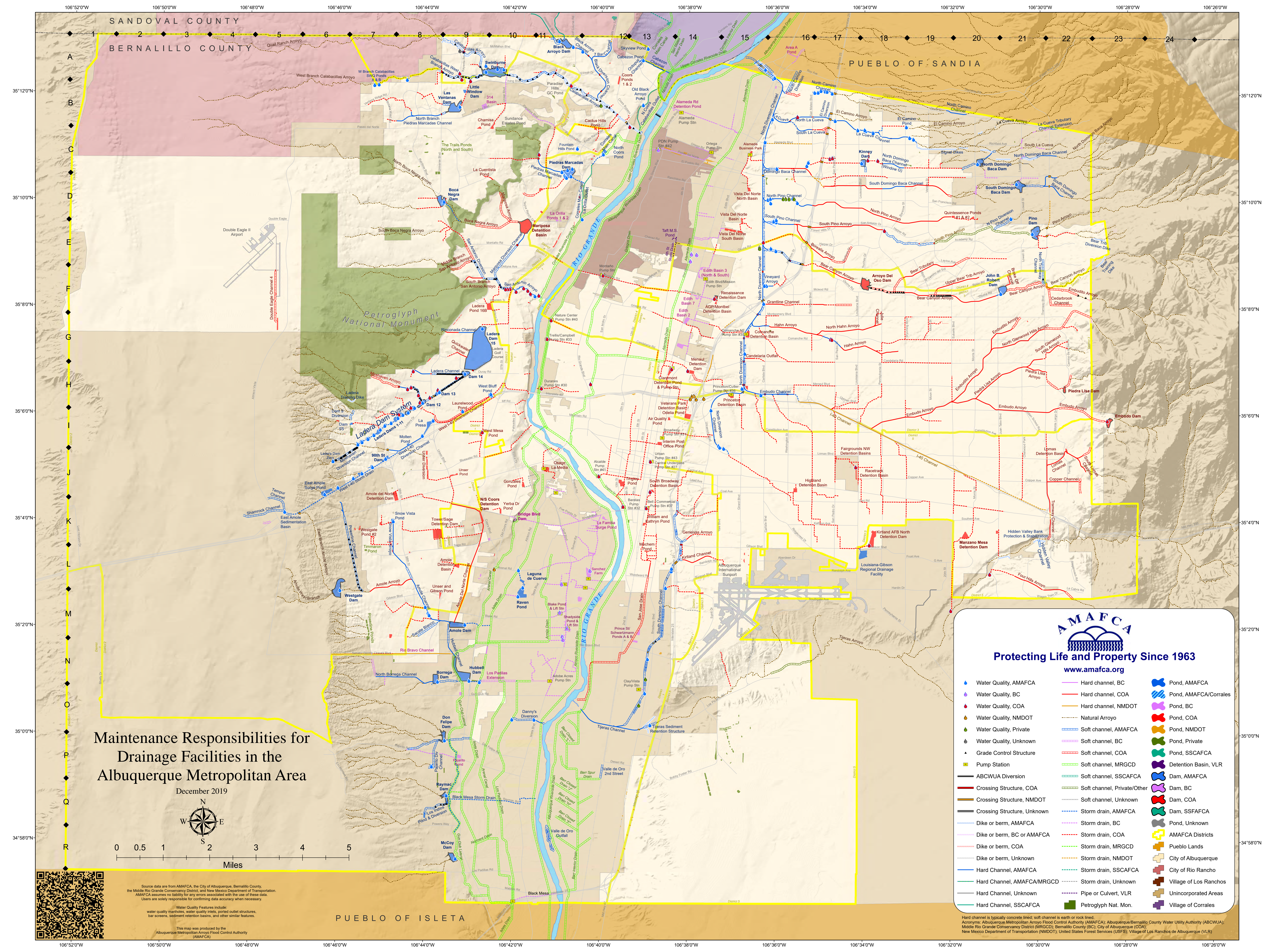
Signature:

Printed Name:

Jerry M. Lovato

Date:

APPENDIX C – AMAFCA’S FACILITIES MAP



Protecting Life and Property Since 1963

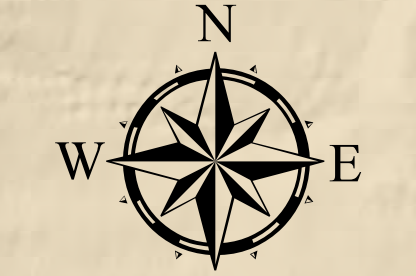
www.amafca.org

- | | | |
|-----------------------------|-----------------------------|------------------------|
| Water Quality, AMAFCA | Hard channel, BC | Pond, AMAFCA |
| Water Quality, BC | Hard channel, COA | Pond, AMAFCA/Corrales |
| Water Quality, COA | Hard channel, NMDOT | Pond, BC |
| Water Quality, NMDOT | Natural Arroyo | Pond, COA |
| Water Quality, Private | Soft channel, AMAFCA | Pond, NMDOT |
| Water Quality, Unknown | Soft channel, BC | Pond, Private |
| Grade Control Structure | Soft channel, COA | Pond, SSFAFCA |
| Pump Station | Soft channel, MRGCD | Detention Basin, VLR |
| ABCWUA Diversion | Soft channel, SSFAFCA | Dam, AMAFCA |
| Crossing Structure, COA | Soft channel, Private/Other | Dam, BC |
| Crossing Structure, NMDOT | Soft channel, Unknown | Dam, COA |
| Crossing Structure, Unknown | Storm drain, AMAFCA | Dam, SSFAFCA |
| Dike or berm, AMAFCA | Storm drain, BC | Pond, Unknown |
| Dike or berm, BC or AMAFCA | Storm drain, COA | AMAFCA Districts |
| Dike or berm, COA | Storm drain, MRGCD | Pueblo Lands |
| Dike or berm, Unknown | Storm drain, NMDOT | City of Albuquerque |
| Hard Channel, AMAFCA | Storm drain, SSFAFCA | City of Rio Rancho |
| Hard Channel, AMAFCA/MRGCD | Storm drain, Unknown | Village of Los Ranchos |
| Hard Channel, Unknown | Pipe or Culvert, VLR | Unincorporated Areas |
| Hard Channel, SSFAFCA | | Village of Corrales |

Hard channel is typically concrete lined, soft channel is earth or rock lined.
Acronyms: Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA); Albuquerque/Bernalillo County Water Utility Authority (ABCWUA); Middle Rio Grande Conservancy District (MRGCD); Bernalillo County (BC); City of Albuquerque (COA); City of Albuquerque (COA); New Mexico Department of Transportation (NMDOT); United States Forest Services (USFS); Village of Los Ranchos de Albuquerque (VLR)

Maintenance Responsibilities for Drainage Facilities in the Albuquerque Metropolitan Area

December 2019



0 0.5 1 2 3 4 5
Miles



Source data are from AMAFCA, the City of Albuquerque, Bernalillo County, the Middle Rio Grande Conservancy District, and New Mexico Department of Transportation. AMAFCA assumes no liability for any errors associated with the use of these data. Users are solely responsible for confirming data accuracy when necessary.

Water Quality Features include: water quality monitors, water quality inlets, ported outlet structures, bar screens, sediment retention basins, and other similar features.

This map was produced by the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA)

APPENDIX D – COOPERATIVE PROGRAMS

**MS4 Permit NMR04A000
AMAFCA SWMP**

Appendix D- Cooperative Programs

- Coordination and Cooperation Letters – Construction & Post-Construction Activities
- Draft Example of Cooperative Coordination Letter
- Mid Rio Grande Stormwater Team (MRGSQT) Intergovernmental Agreement, First Amendment to Stormwater Team Intergovernmental Agreement, and Bylaws
- MRGSQT Memorandum of Understanding (MOU)
- Technical Advisory Group (TAG) Memo of Agreement
- Compliance Monitoring Cooperative (CMC) Intergovernmental Agreement
- MOUs for CMC Delegation of Authority for Data Entry into netDMR System
- Letter from EPA Approving AMAFCA Entering the CMC Data for the Group
- ABCWUA Overflow Emergency Response Plan – Coordination Plan
- Agency and Area-Wide Flood Control Maintenance Contracts with NMDOT and City of Albuquerque

Bruce M. Thomson, P.E., Chair
Cynthia D. Borrego, Vice Chair
Ronald D. Brown, Secretary-Treasurer
Deborah L. Stover, Assistant Secretary-Treasurer
Tim Eichenberg, Director

Jerry M. Lovato, P.E.
Executive Engineer



**Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority**

2600 Prospect N.E., Albuquerque, NM 87107
Phone: (505) 884-2215 Fax: (505) 884-0214
Website: www.amafca.org

November 29, 2016

U.S. EPA, Region 6
Water Quality Protection Division
Operations Support Office (6WQ-O)
1445 Ross Avenue
Dallas, Texas 75202-2733

To Whom It May Concern:

As part of Albuquerque Metropolitan Arroyo Flood Control Authority's (AMAFCA) MS4 permitting requirements we would like to document that AMAFCA currently, and will continue to, coordinate and cooperate with other agencies on cooperative construction projects, as they pertain to stormwater runoff and MS4 compliance. The agency sign-off on plan sets documents this coordination. As part of this cooperative arrangement, review costs will continue to be absorbed by the respective agency.

This letter will become a part of AMAFCA's Stormwater Management Program (SWMP).

Sincerely,

Patrick Chavez, PE
AMAFCA Storm Water Quality Engineer

EPA Concurrence by:

Date _____

Title _____

Bruce M. Thomson, P.E., Chair
Cynthia D. Borrego, Vice Chair
Ronald D. Brown, Secretary-Treasurer
Deborah L. Stover, Assistant Secretary-Treasurer
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Jerry M. Lovato, P.E.
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November 29, 2016

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Operations Support Office (6WQ-O)
1445 Ross Avenue
Dallas, Texas 75202-2733

To Whom It May Concern:

As part of Albuquerque Metropolitan Arroyo Flood Control Authority's (AMAFCA) MS4 permitting requirements we would like to document that AMAFCA currently, and will continue to, coordinate and cooperate with other agencies and developers on development reviews of projects with overlapping jurisdictions as they pertain to stormwater runoff. Structural and non-structural best management practices (BMPs) may be required, where feasible. The agency sign-off on plan sets documents this coordination. As part of this cooperative arrangement, review costs will continue to be absorbed by the respective agency.

This letter will become a part of AMAFCA's Stormwater Management Program (SWMP).

Sincerely,

Patrick Chavez, PE
AMAFCA Storm Water Quality Engineer

EPA Concurrence by:

Date _____

Title _____

Bruce M. Thomson, P.E., Chair
Cynthia D. Borrego, Vice Chair
Ronald D. Brown, Secretary-Treasurer
Deborah L. Stover, Assistant Secretary-Treasurer
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Operations Support Office (6WQ-O)
1445 Ross Avenue
Dallas, Texas 75202-2733

To Whom It May Concern:

As part of Albuquerque Metropolitan Arroyo Flood Control Authority's (AMAFCA) MS4 permitting requirements we would like to document that AMAFCA currently, and will continue to, coordinate and cooperate with other agencies related to drainage and water quality improvements, project priorities, and multi-agency funding opportunities. As part of this cooperative arrangement, coordination costs will continue to be absorbed by the respective agency.

This letter will become a part of AMAFCA's Stormwater Management Program (SWMP).

Sincerely,

Patrick Chavez, PE
AMAFCA Storm Water Quality Engineer

EPA Concurrence by:

Date _____

Title _____

Bruce M. Thomson, P.E., Chair
Cynthia D. Borrego, Vice Chair
Ronald D. Brown, Secretary-Treasurer
Deborah L. Stover, Assistant Secretary-Treasurer
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1445 Ross Avenue
Dallas, Texas 75202-2733

To Whom It May Concern:

As part of Albuquerque Metropolitan Arroyo Flood Control Authority's (AMAFCA) MS4 permitting requirements we would like to document that AMAFCA currently, and will continue to, coordinate and cooperate with other agencies on development reviews of projects with overlapping jurisdictions as they pertain to stormwater runoff and opportunities to implement GI/LID/Sustainable practices. The respective agency sign-off on plan sets documents this coordination. As part of this cooperative coordination, review costs will continue to be absorbed by the respective agency.

This letter will become a part of AMAFCA's Stormwater Management Program (SWMP).

Sincerely,

Patrick Chavez, PE
AMAFCA Storm Water Quality Engineer

EPA Concurrence by:

_____ Date _____

Title _____

Bruce M. Thomson, P.E., Chair
Cynthia D. Borrego, Vice Chair
Ronald D. Brown, Secretary-Treasurer
Deborah L. Stover, Assistant Secretary-Treasurer
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1445 Ross Avenue
Dallas, Texas 75202-2733

To Whom It May Concern:

As part of Albuquerque Metropolitan Arroyo Flood Control Authority's (AMAFCA) MS4 permitting requirements we would like to document that AMAFCA currently, and will continue to, coordinate and cooperate with other agencies on development reviews of projects with overlapping jurisdictions as they pertain to stormwater runoff. The agency sign-off on plan sets documents this coordination. As part of this cooperative arrangement, review costs will continue to be absorbed by the respective agency.

This letter will become a part of AMAFCA's Stormwater Management Program (SWMP).

Sincerely,

Patrick Chavez, PE
AMAFCA Storm Water Quality Engineer

EPA Concurrence by:

_____ Date _____
Title _____

Example of
Cooperative
Coordination Letter

Month xx, 20xx

Mr. Kevin Daggett, P.E.
City of Albuquerque
Municipal Development, Stormwater Management Section
One Civic Plaza, 3rd Floor, Room 301
Albuquerque NM 87102

Mr. Daggett,

As part of AMAFCA's MS4 permitting requirements, we would like to document that AMAFCA and the City of Albuquerque (COA) are currently, and will continue to, coordinate and cooperate regarding the MS4 Dissolved Oxygen Program components required in the Middle Rio Grande Watershed MS4 Permit (NPDES Permit No. NMR04A000). The Dissolved Oxygen Program is specified in the MS4 Permit as "applicable only to the COA and AMAFCA as a continuation of the program in 2012 NMS000101 individual permit" – Part I.C.1.d. The Dissolved Oxygen Program is also required as part of the MS4 Permit in the Endangered Species Act requirements section – Part I.C.3.a.

AMAFCA has developed a strategy and related procedures for meeting the MS4 Dissolved Oxygen Program requirements. These documents are attached to this letter for your records. AMAFCA will continue to operate the sondes required to meet the monitoring requirements for the Dissolved Oxygen Program and continue to complete and submit the annual Incidental Take Report for EPA and US Fish and Wildlife Service (USFWS).

If you have any comments or suggestions for improving the attached strategy and procedures, please contact Patrick Chavez. As part of this cooperative arrangement, program costs will continue to be absorbed by each respective agency.

Please sign and return this letter indicating your concurrence that the City of Albuquerque will continue to coordinate and cooperate with AMAFCA throughout the duration of the NMR04A000 MS4 Permit which was authorized by EPA dated December 22, 2014.

This letter will become a part of AMAFCA's Stormwater Management Plan (SWMP) and MS4 Annual Report documentation. I would suggest that you retain a copy for your records also.

Sincerely,

AMAFCA

City of Albuquerque Concurrence by:

Date _____

Title _____

Intergovernmental Agreement Regarding the Operation, Function,
and Funding of the Storm Water Team

THIS AGREEMENT is made and entered into this 27th day of August, 2008, by and among the County of Bernalillo ("COUNTY"), the City of Albuquerque ("COA"), the Albuquerque Metropolitan Arroyo Flood Control Authority ("AMAFCA"), the New Mexico Department of Transportation ("NMDOT"), the Southern Sandoval County Arroyo Flood Control Authority ("SSCAFCA"), and the Ciudad Soil and Water Conservation District ("CIUDAD"), all political subdivisions of the State of New Mexico, and the University of New Mexico ("UNM"), a state educational institution, individually referred to as "Party" and collectively referred to as "Parties."

WITNESSETH:

WHEREAS, the National Pollution Discharge Elimination System (NPDES) storm water discharge permits for small and large municipal separate storm sewer systems ("MS-4") include a minimum control measure regarding public outreach and education; and

WHEREAS, this minimum control measure requires each permittee to develop and distribute educational materials to the community or conduct equivalent public outreach activities about the impacts of storm water discharges on receiving water bodies and the actions that the public can take to reduce pollutants in storm water runoff; and

WHEREAS, COA, AMAFCA, NMDOT, and UNM, co-permittees of a MS-4 Phase I permit, and the COUNTY, a permittee of a Phase II permit, entered into a Cooperative Agreement dated October 20, 2005 in order to accomplish said public outreach and education, and the group informally became known as the Storm Water Team; and

WHEREAS, the Storm Water Team hired a Storm Water Quality Education Coordinator ("Coordinator") to help develop a public education campaign and produce public service announcements including print materials for distribution, and that contract expires November 2008; and

Intergovernmental Agreement Regarding the Operation, Function,

and Funding of the Storm Water Team

WHEREAS, SSCAFCA desires to combine efforts to educate the public on storm water quality as required in their Phase II storm water discharge permit, and to become one of the participating agencies of the Storm Water Team; and

WHEREAS, CIUDAD desires to combine efforts to educate the public on storm water quality as part of their Watershed Restoration Action Strategy, and to become one of the participating agencies of the Storm Water Team; and

WHEREAS, SSCAFCA and CIUDAD both desire to provide funding as part of their membership to the Storm Water Team; and

WHEREAS, each Party has an interest in reducing pollution and/or meeting storm water permit requirements within their respective boundaries, which are shown in Exhibit 1; and

WHEREAS, with new members being added, it is appropriate to enter into this Agreement in order to formalize the Storm Water Team mission and function, and establish future funding streams.

**THEREFORE IN CONSIDERATION OF THE PROMISES AND COVENANTS
CONTAINED HEREIN, THE PARTIES HERETO AGREE AS FOLLOWS:**

1. The Storm Water Team ("Team") will include all members that have signed a Cooperative Funding Agreement, comply with its terms and continue to fund the team. Additional non-voting members will include other agencies, organizations, or individuals that will provide technical assistance needed to allow the Team to accomplish its mission.
2. The Team will serve as the focal point on public education and outreach regarding storm water quality in the Albuquerque Reach of the Rio Grande watershed, which is

Intergovernmental Agreement Regarding the Operation, Function,
and Funding of the Storm Water Team

the area that drains to the Rio Grande between Algodones and Isleta Pueblo. The Team mission statement is hereby agreed to by the Parties:

The Storm Water Team is a multi-agency committee dedicated to providing public education and awareness regarding storm water pollution and how to reduce debris and other pollutants in the Albuquerque Reach of the Rio Grande and its tributary arroyos.

3. The Team will have an Executive Committee made up of one voting member from each Party in good standing, which is defined as having paid their expected contribution, as described in Section 4. Each Party in good standing will designate a staff member to be on the Executive Committee. Other staff liaisons will be assigned to the Team as necessary to support the Team mission. Other/outside agencies may participate on the Team by attending meetings and giving input; however, only the Executive Committee may vote on Team decisions. The purpose of the Executive Committee will be to administer and direct the Team and Coordinator in accordance with the provisions herein. Decisions of the Executive Committee will be decided by majority vote of the Executive Committee.
4. Each Party agrees to provide payment for Fiscal Year 2009 in the amount shown in the Contribution Schedule, which may include the value of Executive Committee approved in-kind services, in Attachment A. For subsequent Fiscal Years, the Contribution Schedule may be adjusted by the Executive Committee, including the value of in-kind contributions.
5. AMAFCA will be the fiscal agent for the purposes of this Agreement. All funds will be held in a separate bank account for the purposes of this Agreement. AMAFCA shall make available to any interested Party, all records, receipts, and other

**Intergovernmental Agreement Regarding the Operation, Function,
and Funding of the Storm Water Team**

documentation with respect to all matters concerning this Agreement, and shall have this account included in its annual audit.

6. Each Party agrees that a Storm Water Quality Education Coordinator will be hired through the Request for Proposal (RFP) process in advance of the expiration of the current Coordinator's contract. The Coordinator shall be a contractor and not an employee of AMAFCA. Responsibilities included in the Storm Water Quality Education Coordination contract will be to develop and manage a comprehensive educational and awareness campaign, arrange all purchases for deliverables and advertising on behalf of the Team, and make presentations to the public as directed. Each Party will have one representative on the Selection Advisory Committee for the request for proposals process. The Selection Advisory Committee will rank proposals and recommend the top three respondents to the AMAFCA Board of Directors. Upon AMAFCA Board of Directors' approval, AMAFCA will negotiate an agreement with the selected consultant. The Executive Committee will provide input on scope and fees; however, final negotiations and approval will be at AMAFCA's sole discretion.
7. The Parties agree that the Storm Water Quality Education Coordination contract is an ongoing program. The effectiveness of the Storm Water Quality Education Coordination contract, with regard to the Team mission statement, will be evaluated prior to annual renewal(s) or request for proposals.
8. AMAFCA will invoice each Party for their respective participation, minus the value of any Executive Committee approved in-kind contributions, in July, at the start of the Fiscal Year. Each Party will pay such invoices to AMAFCA within forty-five

Intergovernmental Agreement Regarding the Operation, Function,
and Funding of the Storm Water Team

(45) days of the date of the invoice. Invoices will be sent to Team members listed in Attachment B.

9. It is intended that the Team's operation and function described in this Agreement are ongoing, subject to continued support and authorized funding by each of the Parties. Each Party has the option to not participate in this Agreement in the future by sending written notice to all the other participating Parties at or before the expiration of the Fiscal Year. In such event, the terminating Party shall not be entitled to return of any contribution(s) made under this Agreement; and this Agreement shall remain in full force and effect by and among the remaining Parties.
10. The Team may accept one-time contributions from outside funding sources, to be used to support the Team mission. The Executive Committee will consider the requested uses of such one-time contributions and will ensure the uses are consistent with the Team's ongoing public outreach and education program. Such contributions shall not constitute voting privileges on the Executive Committee.
11. The Parties agree that effort will be expended within the respective boundaries of each participating agency, proportional to funding contributions.
12. If any situation arises which adversely affects any Party's participation in this Agreement, said Party will immediately, and in writing, notify the other Parties. Any circumstance that materially affects this Agreement will be promptly and equitably resolved by all Parties and if necessary, an amendment to this Agreement shall be executed.
13. The obligations of each Party under this Agreement shall be performed in compliance with all applicable laws, statutes and ordinances. Nothing herein is intended to

Intergovernmental Agreement Regarding the Operation, Function,
and Funding of the Storm Water Team

constitute any agreement for the Parties to perform any activity in violation of the Constitution or Laws of the State of New Mexico or the Ordinances of any entity that is a Party to this Agreement.

14. If any clause or provision in this Agreement is illegal, invalid or unenforceable, under present or future laws effective during the term of this Agreement, then and in that event, it is the intention of the parties hereto that the remainder of this Agreement shall not be affected thereby.
15. It is specifically agreed among the Parties that this Agreement does not, and is not intended to, create in the public, or any member thereof, any rights whatsoever, such as but not limited to, the rights of a third Party beneficiary, nor to authorize anyone not a Party to this Agreement to maintain a suit for wrongful death or any other claim whatsoever.
16. As among the Parties, each shall be solely responsible for any and all liability from personal injury, including death, or damage to property, arising from any negligent or intentional act or failure to act of the respective Party, its officials, agents, contractors or employees pursuant to this Agreement. Liabilities of each Party shall be subject to the immunities and limitations of the Tort Claims Act, §§41-4-1, et seq., NMSA, 1978, and any amendments thereto. By entering into this Agreement, the COUNTY and its "public employees" as defined in the New Mexico Tort Claims Act, the COA and its "public employees" as defined in the New Mexico Tort Claims Act, AMAFCA and its "public employees" as defined in the New Mexico Tort Claims Act, NMDOT and its "public employees" as defined in the New Mexico Tort Claims Act, UNM and its "public employees" as defined in the New Mexico Tort Claims

**Intergovernmental Agreement Regarding the Operation, Function,
and Funding of the Storm Water Team**

Act, SSCAFCA and its "public employees" as defined in the New Mexico Tort Claims Act, and CIUDAD and its "public employees" as defined in the New Mexico Tort Claims Act, do not waive sovereign immunity, do not waive any defense and/or do not waive any limitation of liability pursuant to law. No provision in this Agreement modifies and/or waives any provision of the New Mexico Tort Claims Act.

17. The effective date of this Agreement shall be the latest date of approval by all of the interested Parties.
18. Upon approval by all Parties, the covenants, terms and conditions of this Agreement shall be binding upon and inure to the benefit of the Parties hereto, their successors and assigns.

Intergovernmental Agreement Regarding the Operation, Function,
and Funding of the Storm Water Team

IN WITNESS WHEREOF, the undersigned have caused this Agreement to be executed as
of the day and year set forth above.

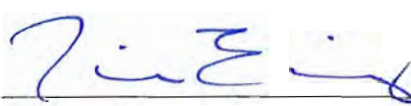
Albuquerque Metropolitan Arroyo
Flood Control Authority

Date: March 20, 2008



Danny Hernandez
Chair of the Board of Directors

Attest:



Tim Eichenberg,
Secretary/Treasurer

Date: March 20, 2008

Intergovernmental Agreement Regarding the Operation, Function,
and Funding of the Storm Water Team

County of Bernalillo

Date: 5/21/08

[Signature]
Thaddeus Lucero, County Manager

Approved As To Form Only:

[Signature]
Deborah Seligman,
Assistant County Attorney

Date: 5/19/08

Recommended By:

[Signature]
Tom Zdunek
~~Tim West~~, Deputy County Manager
Public Works Division

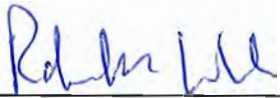

Date: 5/21/08

BC CCN 2008-0264

**Intergovernmental Agreement Regarding the Operation, Function,
and Funding of the Storm Water Team**

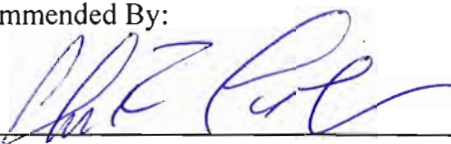
City of Albuquerque

Approved As To Form Only:

 
City Attorney


Date: 5-12-8

Recommended By:


John Castillo, Director

Date: 5/13/08

Approved By:


Dr. Bruce Perlman, Chief Administrative Officer

Date: 5/16/08

Intergovernmental Agreement Regarding the Operation, Function,
and Funding of the Storm Water Team

University of New Mexico

Recommended By:


Donna K. Smith
Director, Safety & Risk Services

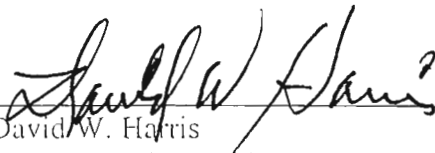
Date: 4-23-8

Approved As To Form Only:


Richard Mertz
Associate University Counsel

Date: 4/29/08

Approved By:

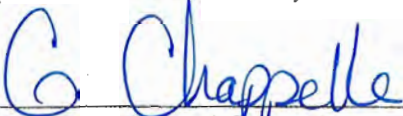

David W. Harris
Executive Vice President for Administration

Date: 5/1/08

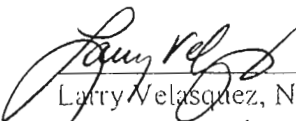
Intergovernmental Agreement Regarding the Operation, Function,
and Funding of the Storm Water Team

New Mexico Department of Transportation

Approved As To Form Only:


Office of the General Counsel
Date: 5/22/08

Approved By:


Larry Velasquez, NMDOT District Three Engineer
Date: 8/28/08

**Intergovernmental Agreement Regarding the Operation, Function,
and Funding of the Storm Water Team**


Ciudad Soil and Water Conservation District

Date: April 7, 2008

Lauro Silva
Lauro Silva, Chair

Intergovernmental Agreement Regarding the Operation, Function,
and Funding of the Storm Water Team

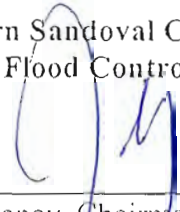
Approved as to Form:



Bernard P. Metzgar
SSCAFCA Attorney
Date: 4/18/08

Southern Sandoval County
Arroyo Flood Control Authority

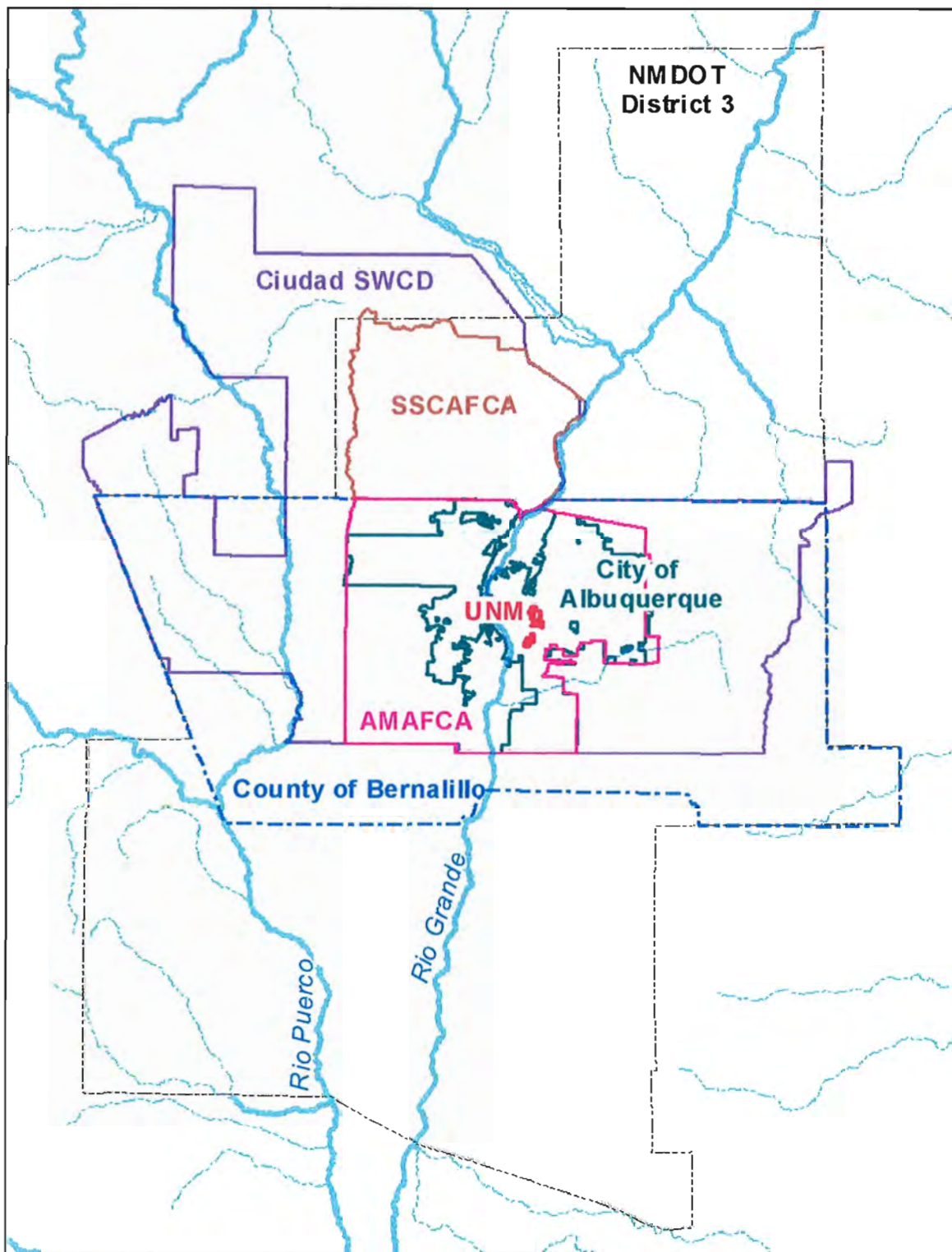
Date: 5/2/08



John Chaney, Chairman

**Intergovernmental Agreement Regarding the Operation, Function,
and Funding of the Storm Water Team**

Exhibit 1
Boundaries of Participating Agencies



Intergovernmental Agreement Regarding the Operation, Function,
and Funding of the Storm Water Team

Storm Water Team Intergovernmental Agreement – Attachment A

STORM WATER TEAM CONTRIBUTIONS

FY 05		Date received by AMAFCA
AMAFCA	\$10,000	12/01/2004
City of Albuquerque	10,000	04/28/2005
County of Bernalillo	10,000	12/02/2004
UNM	7,000*	07/19/2005
NMDOT	10,000	05/26/2005
Total	\$47,000	
FY 06		
AMAFCA	\$10,000	12/23/2005
City of Albuquerque	10,000	01/23/2006
County of Bernalillo	10,000	06/29/2006
UNM	7,000	02/02/2006
NMDOT	10,000	06/29/2006
Total	\$47,000	
FY 07		
AMAFCA	\$10,000	03/21/2007
City of Albuquerque	10,000	06/13/2007
County of Bernalillo	10,000	02/11/2008
UNM	7,000	05/22/2007
NMDOT	10,000	04/02/2008
Total	\$47,000	
FY 08		
AMAFCA	\$10,000	10/03/2007
City of Albuquerque	10,000	09/25/2007
County of Bernalillo	10,000	03/18/2008
UNM	7,000	12/10/2007
NMDOT	10,000	04/02/2008
Total	\$47,000	
FY 09 Expected Contributions		
AMAFCA	\$10,000	
City of Albuquerque	10,000	
County of Bernalillo	10,000	
UNM	7,000	
NMDOT	10,000	
SSCAFCA	10,000	
Crucial	10,000	
Total	\$67,000	

Intergovernmental Agreement Regarding the Operation, Function,
and Funding of the Storm Water Team

Storm Water Team Intergovernmental Agreement - Attachment B

STORM WATER TEAM CONTACT ADDRESSES

Christy Burton
AMAFCA
2600 Prospect Ave NE
Albuquerque, NM 87107

cc Irene Jeffries (same address)
on invoices

Storm Drainage Section
Dept. of Municipal Development
Attn: Kathy Verhage
P.O. Box 1293, Rm. 301
Albuquerque, NM 87103

cc Roland Penttila (same address)
on invoices

Vern Hershberger
Safety & Risk Services
University of New Mexico
MSC07 4100
Albuquerque, NM 87131

277-4756

Send original invoices to:
Accounts Payable
University of New Mexico
MSC01 1290
Albuquerque, NM 87131

Invoice must contain
P.O. Number
Contact Vern Hershberger
Fax # 505-845-1150
Send to 505-845-1150

Carol Moritz, Administrative Manager
Ciudad Soil & Water Conservation District
6200 Jefferson NE, Room 125
Albuquerque, NM 87109

Kathy Trujillo
New Mexico Department of Transportation
District 3
PO Box 91750
Albuquerque, NM 87199-1750

Patricia Dominguez
Bernalillo County
Public Works Division
2400 Broadway Blvd SE
Bldg N
Albuquerque, NM 87102

cc Mary Murnane (same address)
on invoices

David Stoliker
SSCAFCA
1041 Commerical N.E.
Rio Rancho, New Mexico 87124

**FIRST AMENDMENT TO
"Intergovernmental Agreement Regarding the Operation, Function, and Funding of the
Storm Water Team"**

THIS FIRST AMENDMENT to Intergovernmental Agreement ("Agreement") Regarding the Operation, Function, and Funding of the Storm Water Team ("Team") is made and entered into this 22nd day of January, 201~~3~~⁴, by and among the County of Bernalillo, the City of Albuquerque ("COA"), the Albuquerque Metropolitan Arroyo Flood Control Authority ("AMAFCA"), the New Mexico Department of Transportation ("NMDOT"), and the Southern Sandoval County Arroyo Flood Control Authority ("SSCAFCA"), all political subdivisions of the State of New Mexico, individually referred to as "Party" and collectively referred to as "Parties."

RECITALS:

WHEREAS, the U.S. Environmental Protection Agency ("EPA") is proposing to issue the Middle Rio Grande Watershed Based Municipal Separate Storm Sewer System (MS4) Permit, to supersede the existing MS4 Permits for Phase I and Phase II permittees; and

WHEREAS, the EPA has identified the following potentially eligible MS4s: COA, AMAFCA, University of New Mexico, NMDOT, County of Bernalillo, County of Sandoval, Village of Corrales, City of Rio Rancho, Village of Los Ranchos de Albuquerque, Kirtland Air Force Base, Town of Bernalillo, State Fairgrounds Expo NM, SSCAFCA, Eastern Sandoval County Arroyo Flood Control Authority ("ESCAFCA"), Sandia National Laboratories, Pueblo of Sandia, Pueblo of Isleta, and Pueblo of Santa Ana; and

WHEREAS, the EPA promotes Cooperative Programs of two or more MS4s to satisfy one or more permit obligations by granting extended Implementation Schedules; and

**FIRST AMENDMENT TO
"Intergovernmental Agreement Regarding the Operation, Function, and Funding of the
Storm Water Team"**

WHEREAS, the MS4 Permits include minimum control measures regarding Public Education and Outreach on Stormwater Impacts and Public Involvement and Participation; and

WHEREAS, the Parties of the Team find it in the best interest to extend annual membership to the potentially eligible MS4s; and

WHEREAS, the Ciudad Soil and Water Conservation District and University of New Mexico were Parties to the original Agreement, but elected to terminate funding and their participation as Parties to the Agreement prior to this Amendment; and

WHEREAS, the Team also operates under the name Middle Rio Grande Stormwater Quality Team.

NOW THEREFORE, County of Bernalillo, COA, AMAFCA, NMDOT, and SSCAFCA hereby agree to amend the original Agreement as follows:

Paragraph No. 1 shall be modified in its entirety to read as follows:
The Team will include all members that have signed a Cooperative Funding Agreement, comply with its terms and continue to fund the Team ("Parties"). Potentially Eligible MS4s may be added to the Team at any time on an annual basis as additional voting members ("Annual Member") without amending this Agreement, provided all requirements for membership have been fulfilled, including providing payment for that Annual Member's expected contribution as described in Section 4. Upon approval by the Team, and without the need to amend this Agreement, other entities may be added to the Team at any time in an advisory capacity only ("Non-Voting Members"). The Team shall establish the requirements for inclusion of an entity on the Team as a Non-Voting Member. The Fiscal Agent will maintain an Annual Roster in the

**FIRST AMENDMENT TO
"Intergovernmental Agreement Regarding the Operation, Function, and Funding of the
Storm Water Team"**

form set forth in Attachment B, which shall list all Parties and Annual Members in good standing and Non-Voting Members approved by the Team. The Annual Roster shall include the contact information for each entity and, if applicable, their designated voting member and billing information. The Annual Roster shall be updated and revised at least annually to reflect the current Parties, Annual Members, and Non-Voting Members and without the need to amend this Agreement. Parties and Annual Members must remain in good standing by providing payment for their respective contributions in order to continue to participate on the Team as either a Party or Annual Member. Any Party and/or Annual Member that does not maintain good standing will be removed from the Annual Roster, and all membership rights will be suspended, except that the entity shall be permitted to participate as a Non-Voting Member. Upon payment of the Party or Annual Members required contribution, the Party or Annual Member will be restored to full membership and will be listed as a Party or Annual Member in good standing, whichever applies, on the Annual Roster.

Paragraph No. 2 shall be modified in its entirety to read as follows:
The primary objective of the Team is to develop a program to meet the Public Education, Outreach, Involvement and Participation requirements of the MS4 Permits in effect for each Party and Annual Member.

Paragraph No. 3 shall be modified in its entirety to read as follows:
Each Party and Annual Member in good standing will designate one person from its staff to serve as the voting member. The voting members from each Party in good standing shall form the Executive Committee of the Team, which shall administer and direct the Team and Coordinator in accordance with the provisions herein. The voting members from each Annual

**FIRST AMENDMENT TO
"Intergovernmental Agreement Regarding the Operation, Function, and Funding of the
Storm Water Team"**

Member in good standing shall be permitted to participate in the activities, votes, and decisions of the Executive Committee, except as otherwise set forth in this Agreement. Non-Voting Members, other staff liaisons assigned to the Team as necessary to support the Team's objectives, and other individual staff members may participate on the Team by attending meetings and giving input, provided however, that only the Executive Committee and voting members of the Annual Members may vote on Team decisions. Decisions of the Team will be decided by majority vote of those members of the Executive Committee and voting members of the Annual Members present, except as otherwise set forth in this Agreement.

Paragraph No. 4 shall be modified in its entirety to read as follows:
The annual contribution of each Party and Annual Member shall be established for each fiscal year by the Contribution Schedule set forth in Attachment A. Each Party and Annual Member agrees to provide payment for its contribution in the amount shown in the Contribution Schedule, which may include the value of in-kind services previously approved by the Executive Committee for such purposes. Annual revisions and/or adjustments to the Contribution Schedule shall be determined by majority vote of the Executive Committee. The voting members representing Annual Members may participate in discussions regarding revisions and/or adjustments to the Contribution Schedule, but will not be permitted to vote on any such revisions or adjustments. The Fiscal Agent will keep record of future changes to the Contribution Schedule on Attachment A. Revisions to Attachment A will not require an amendment to this Agreement.

**FIRST AMENDMENT TO
"Intergovernmental Agreement Regarding the Operation, Function, and Funding of the
Storm Water Team"**

IN WITNESS WHEREOF, the undersigned have caused this FIRST AMENDMENT to
be executed as of the day and year set forth above.


**Albuquerque Metropolitan Arroyo
Flood Control Authority**

Date: 11/7/2013



Tim Eichenberg
Chair of the Board of Directors

Attest:



Bruce M. Thomson
Secretary/Treasurer

Date: 11/7/13

FIRST AMENDMENT TO
"Intergovernmental Agreement Regarding the Operation, Function, and Funding of the
Storm Water Team"


County of Bernalillo

Date: 12/16/10



Tom Zdunek, County Manager

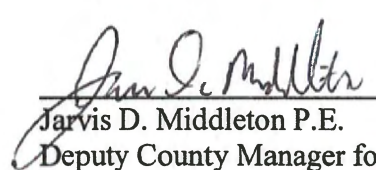
Approved As To Form Only:



Peter Auh,
Deputy County Attorney

Date: 12/12/13

Recommended By:

 12/13/13

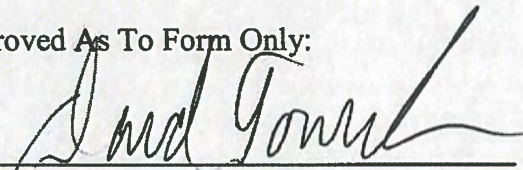
Jarvis D. Middleton P.E.
Deputy County Manager for Public Works

Date: 12/13/13

**FIRST AMENDMENT TO
"Intergovernmental Agreement Regarding the Operation, Function, and Funding of the
Storm Water Team"**

City of Albuquerque

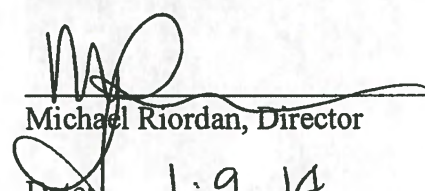
Approved As To Form Only:



City Attorney

Date: 1/7/2014

Recommended By:



Michael Riordan, Director

Date: 1.9.14

Approved By:



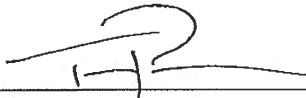
Robert J. Perry, Chief Administrative Officer

Date: 1/22/14

**FIRST AMENDMENT TO
"Intergovernmental Agreement Regarding the Operation, Function, and Funding of the
Storm Water Team"**

New Mexico Department of Transportation

Approved By:



Timothy L. Parker, M.S., P.E.
NMDOT District Three Engineer

Date: 12/20/13

Approved As To Form Only:

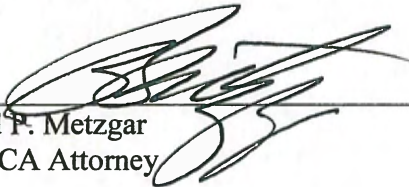


Office of the General Counsel

Date: 12/20/2013

**FIRST AMENDMENT TO
"Intergovernmental Agreement Regarding the Operation, Function, and Funding of the
Storm Water Team"**

Approved as to Form:

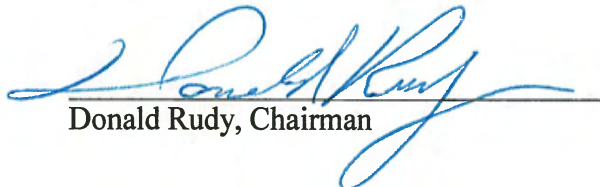


Bernard P. Metzgar
SSCAFCA Attorney

Date: 11/15/13

**Southern Sandoval County
Arroyo Flood Control Authority**

Date: 11/15/13



Donald Rudy, Chairman

MIDDLE RIO GRANDE STORMWATER QUALITY TEAM BYLAWS

ARTICLE I: NAME AND PURPOSE

These bylaws have been proposed and accepted by majority vote of the Storm Water Team (“Team”) Voting Members as defined herein, on August 27, 2014. These bylaws stand as operating principles in addition to the “Intergovernmental Agreement Regarding the Operation, Function, and Funding of the Storm Water Team” (“Original Agreement”) implemented in 2008, and the “First Amendment to the Intergovernmental Agreement Regarding the Operation, Function, and Funding of the Storm Water Team” (“First Amendment”) as signed and finalized in 2014 and any subsequent amendments as signed and finalized. In the event of a conflict between the terms of these bylaws and the Original Agreement and/or First Amendment, the Original Agreement and/or First Amendment shall control.

ARTICLE II: THE EXECUTIVE COMMITTEE AND VOTING MEMBERS

The voting members of the Team (“Voting Members”), and the members of the executive committee (“Executive Committee”), shall be those identified as such in the First Amendment.

ARTICLE III: OFFICERS

Section 1

Officers of the Team shall include the following:

- A. Chair. Responsible for directing meeting activities in conjunction with business agendas, and generally ensuring the effectiveness of the Team.
- B. Secretary. Acts as the record-keeper for the Team, including recording the minutes of all meetings and making the minutes and records available to members upon request. Minutes shall include at a minimum a record of all votes, resolution of agenda items, those agenda items carried over for further discussion, and other discussion or notes for the next meeting. The Secretary is also responsible to keep on file all committee reports, the Team’s official membership roll and to call roll where it is required.
- C. Treasurer. Responsible for providing a Treasurer’s Report at each meeting, which may consist of the cash balance and outstanding obligations or committed costs. In addition, the Treasurer is required to make a full financial report annually in conjunction with the Fiscal Agent. The annual financial report may consist of summary of annual receipts and disbursements. The Treasurer shall also serve as the Chair *pro tem* and preside over meetings in the absence of the Chair.

In the event that the number of Voting Members exceeds eight (8), the functions of Treasurer shall be divided into two (2) positions: Treasurer and Vice Chair. In such event, the Treasurer shall retain all financial functions, and the Vice Chair shall serve as the Chair *pro tem* and preside over meetings in the absence of the Chair. The Vice Chair shall be elected by majority vote of Voting Members present at the next meeting of the Team and serve the remainder of the fiscal year.

MIDDLE RIO GRANDE STORMWATER QUALITY TEAM BYLAWS

Section 2

Election of all officers shall take place at the first scheduled meeting of each Fiscal Year. Officers of the Team shall be elected by majority vote of the Voting Members present. Each officer shall serve one year, and may succeed themselves in office so long as elected in accordance with these bylaws for each subsequent term. An officer may only be removed from office by a majority vote of all Voting Members.

Section 3

In the event an officer resigns prior to the expiration of their term, their successor shall be elected at the next meeting of the Team. A successor elected to fill a vacancy in an office due to an officer's resignation or removal shall serve the remainder of the vacated term. Until a successor is elected, the remaining officer(s) shall assume the duties of the vacant office, with the exception of a vacancy in the position of Chair, which duties shall be assumed by the Vice Chair if that position then-exists.

ARTICLE IV: COMMITTEES

A Budget Committee will be formed each year in order to manage the budget and coordinate with the Fiscal Agent regarding all financial matters. Additional or other working committees or groups may be formed to address issues or projects which may arise upon the majority vote of the Voting Members present.

ARTICLE V: MEETINGS

Section 1

Meetings shall be officially scheduled during the first meeting of the fiscal year, with meetings to be scheduled bi-monthly. The complete annual schedule shall be distributed to Voting Members via e-mail. Posting or e-mailing of the annual schedule shall constitute notice for all meetings listed therein.

Section 2

Alternate meeting dates must be scheduled no later than the prior month's meeting by majority vote of the Voting Members. Additional meetings may be called for and scheduled by majority vote of Voting Members. The Chair may cancel any regularly scheduled meeting if no items are before the Team for that meeting, provided however, that the Team shall hold a minimum of four (4) meetings per year.

Section 3

The Chair shall distribute the agenda to all Voting Members at least one (1) week prior to any meeting. Order of agenda items and deletion or addition of items may be changed by majority vote of the Voting Members.

MIDDLE RIO GRANDE STORMWATER QUALITY TEAM BYLAWS

Section 4

Notice of the annual schedule, meeting dates and agendas should be posted on the “Keep the Rio Grand” website.

Section 5

Meetings shall be presided over by the Chair and shall be conducted in substantial compliance with Robert’s Rules of Order. Voting Members shall be considered members for purposes of applying Robert’s Rules of Order.

Section 6

Members of the public may request time on the meeting agenda by request to the Chair or Education Coordinator at least ten (10) days prior to a scheduled meeting. The Chair may include such an item, or list it to be considered if time allows.

ARTICLE VI: RULES OF VOTING

Section 1

At all meetings of the Team, the presence of at least a majority of the Voting Members of the Team shall be necessary and sufficient to constitute a quorum for the transaction of business. Any action of the Team upon any matter shall be valid and effective, with the affirmative vote of a majority of the Voting Members present at a meeting duly convened and at which a quorum is present, unless otherwise required herein or by the Original Agreement or First Amendment. In the event the agenda includes items which require a quorum vote and a quorum is not established, the item shall be moved to the next meeting. Voting shall be conducted in substantial compliance with Robert’s Rules of Order, except provided for otherwise herein.

Section 2

Any item may be approved by acclamation or by roll-call vote, unless otherwise required by Robert’s Rules of Order. Any Voting Member may call for a vote on any item under discussion at any time during a meeting. If that call for vote is seconded, the Chair shall open for discussion, and call for a vote. Likewise, any item may be tabled by a two-thirds vote. All votes shall be recorded by the Secretary. In the event of a tie, any Voting Member may call for a re-vote.

Section 3

Any Voting Member who must be absent from a meeting and consequent vote(s) may delegate their vote to a temporary replacement from their agency.

Section 4

Electronic or e-mail voting on business between regularly scheduled meetings shall be permitted in accordance with the policy duly adopted by the Team.

MIDDLE RIO GRANDE STORMWATER QUALITY TEAM BYLAWS

ARTICLE VII: FINANCES

Section 1

An annual budget for the Team shall be adopted prior to the beginning of each fiscal year. The fiscal year for the Team runs from July 1 to June 30. The annual budget shall be subject to a vote. An updated budget shall be presented at each meeting.

Section 2

The Fiscal Agent shall be AMAFCA or any other entity identified as such in the Original Agreement and the First Amendment and any subsequent amendments as signed and finalized.

Section 3

The annual budget shall contain a line-item for an Education Coordinator selected by the Team. Selection of the Education Coordinator shall be subject to a vote.

Section 4

All expenditures for special projects shall be determined by a simple majority vote of the Voting Members. Proposals and projects including a scope of work and cost shall be voted and approved before any work shall commence.

Section 5

Invoices for prior approved projects shall include a percentage of work accomplished, or itemized direct costs, as well as a current schedule for completion. Invoices exceeding the percentage of work accomplished shall not be paid, except where prior approved direct itemized costs are billed.

Invoices for prior approved projects may be approved at any time either at a meeting or via email by one of the following Officers in the order listed: (1) Treasurer; (2) Chair; (3) Chair pro tem or Vice Chair; or (4) Secretary. Invoices for work in progress (partial payments) shall be evaluated according to the percentage of work completed and the percentage of money drawn.

Any invoices for expenditures not previously approved by majority vote of the Voting Members can only be approved during a scheduled meeting.

ARTICLE VIII: AMENDMENTS

These bylaws may be amended during a scheduled meeting upon a two-thirds vote of the Voting Members present. Notice of discussion and amendment shall be posted in the agenda at least seventy (72) hours prior to the scheduled meeting at which the vote will be taken. This notice must include both the text of the current bylaws, as well as the text of any proposed change(s). Amendments become effective immediately upon adoption.

**MEMORANDUM OF UNDERSTANDING
BY AND BETWEEN
THE MID RIO GRANDE STORMWATER QUALITY TEAM AND
CIUDAD SOIL AND WATER CONSERVATION DISTRICT**

This Memorandum of Understanding (hereinafter the "MOU") is entered into this ____ day of _____, 2020, between the Mid Rio Grande Stormwater Quality Team, an intergovernmental agency organization consisting of the City of Albuquerque, Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA), New Mexico Department of Transportation District 3, Sandoval County, Village of Corrales, City of Rio Rancho, Los Ranchos de Albuquerque, Town of Bernalillo the Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA), and the Eastern Sandoval County Arroyo Flood Control Authority (ESCAFCA), (hereinafter collectively referred to as "MRGSQT") and Ciudad Soil and Water Conservation District, a political subdivision of the State of New Mexico (hereinafter referred to as "Ciudad SWCD"),

WHEREAS, MRGSQT has entered into a Cooperative Funding Agreement establishing the MRGSQT; and

WHEREAS, MRGSQT is responsible for developing and implementing a public education and outreach program in the area designated as being subject to the EPA MS4 stormwater permits; and

WHEREAS, MRGSQT desires to engage Ciudad SWCD to render comprehensive water resources education services, as indicated in the attached scope of work (Exhibit A), and Ciudad SWCD is willing to provide such services and to enter into this MOU;

WHEREAS, Ciudad SWCD jurisdiction includes the area served by MRGSQT and has employed education specialists qualified to provide comprehensive water resources education, and

WHEREAS, Ciudad SWCD has legal authority to enter into this agreement as established at 73-20-44 NMSA; and

WHEREAS, Ciudad SWCD and MRGSQT (collectively referred to as the "Parties") have agreed upon a proposal, attached hereto as Exhibit A; and

NOW, THEREFORE, in consideration of the premises and mutual obligations set forth herein, the parties agree as follows:

1. MRGSQT OBLIGATIONS.

Upon receipt of detailed invoice from Ciudad SWCD, MRGSQT shall review, approve and pay said invoices no later than 60 days from receipt.

2. CIUDAD SWCD OBLIGATIONS:

Ciudad SWCD shall:

- A. Perform water resources education consulting services for MRGSQT as contained in the attached proposal dated July 1, 2020 (Exhibit A) and based upon the terms and conditions set forth herein. All work performed shall attempt to meet the highest ethical and moral standards and shall comply with all applicable federal, state, and local regulations and requirements.
- B. Invoice MRGSQT quarterly for costs incurred in the performance of services, not to exceed \$79,475.00 in the aggregate.
- C. Provide MRGSQT with detailed invoices, for review and approval as set forth in paragraph 1, above.
- D. Obtain written approval from MRGSQT prior to modifying or authorizing changes to the scope of work, as set forth in Exhibit A.
- E. Furnish MRGSQT with a completed report on all educational programs and projects.

3. CIVIL RIGHTS LAWS AND REGULATIONS COMPLIANCE:

The parties shall comply with all federal, state, and local laws and ordinances applicable to the work called for herein. The Parties further agree to operate under and be controlled by the Title VI and Title VII of the Civil Rights Act of 1964, the Age Discrimination Employment Act, the Americans with Disabilities Act of 1990, the Environmental Justice Act of 1994, the Civil Rights Restoration Act of 1987, the New Mexico Human Rights Act, and Executive Order No. 11246 entitled "Equal Employment Opportunity," as amended by Executive order 11375 and as supplemented by the Department of Labor Regulations (41 CFR 60). Accordingly, 49 CFR 21 is applicable to this MOU and incorporated herein by reference.

4. EQUAL OPPORTUNITY COMPLIANCE:

Ciudad SWCD agrees to abide by all Federal and State Laws and rules and regulations, and executive orders of the Governor of the State of New Mexico, pertaining to equal employment opportunity. In accordance with all such laws and rules and regulations, and executive orders of the Governor of the State of New Mexico, Ciudad SWCD agrees to assure that no person in the United States shall, on the grounds of race, color, religion, national origin, sex, sexual preference, age or handicap, be excluded from employment with or participation in, be denied the benefits of, or be otherwise subjected to discrimination under, any program or activity performed under this MOU. If Ciudad SWCD is found to be not in compliance with these requirements during the life of this MOU, Ciudad SWCD agrees to take appropriate steps to correct these deficiencies.

5. ACCOUNTABILITY OF RECEIPTS AND DISBURSEMENTS:

There shall be strict accountability for all receipts and disbursements relating hereto. The Parties shall maintain all records and documents relative to this MOU for a minimum of ten (10) years after completion of the scope of work. Ciudad SWCD shall furnish the MRGSQT, upon demand, any and all such records relevant to this MOU and allow them the right to audit all records, which support the terms of this MOU.

6. THIRD PARTY BENEFICIARY CLAUSE:

This MOU is not intended by any of the provisions of any part of the MOU to create in the public, or any member thereof, a third party beneficiary or to authorize anyone not a party to the MOU to maintain a suit for wrongful death, bodily and/or personal injury to person, damage to property, and/or any other claim(s) whatsoever pursuant to the provisions of this MOU.

7. TORT CLAIMS ACT:

Neither party shall be responsible for liability incurred as a result of the other party's acts or omissions in connection with this Agreement. Any liability incurred in connection with this Agreement is subject to the immunities and limitations of the New Mexico Tort Claims Act, Sections 41-4-1, et. seq., NMSA 1978, as amended. This paragraph is intended only to define the liabilities between the parties hereto and it is not intended to modify, in any way, the parties' liabilities as governed by common law and the New Mexico Tort Claims Act. Ciudad SWCD, and their "public employees" and the MRGSQT, and their "public employees" as defined in the New Mexico Tort Claims Act, do not waive any defense and/or do not waive any limitation of liability pursuant to law. No provision in this MOU modifies and/or waives any provision of the New Mexico Tort Claims Act.

8. TERM:

Unless sooner terminated, this MOU shall be effective as of the date executed by both parties and shall expire June 30, 2021. This MOU may be renewed annually by agreement of the Parties.

9. TERMINATION:

This MOU may be terminated by either of the parties hereto upon written notice delivered to the other party at least thirty (30) days prior to the intended date of termination. By such termination, neither party may nullify obligations already incurred for performance or failure to perform prior to the date of termination.

10. ASSIGNMENT:

Neither party shall assign nor transfer any interest in this MOU without the prior written approval of the other party.

11. NOTICES:

Any notice required or permitted to be given hereunder shall be sufficient if mailed to the address shown below or faxed to the number shown below, or to such other address or fax number to which such party has given written notice to the other party.

For notice to Ciudad SWCD:

Ciudad SWCD
Attn: Ciudad SWCD Chairman
One Sun Avenue, Suite 160
Albuquerque, NM 87109
(505) 510-3478

For notice to MRGSQT:

MRGSQT
Attn: Patrick Chavez, PE
2600 Prospect Ave NE
Albuquerque, NM 87107
Fax: (505) 884-0214

12. SEVERABILITY:

In the event that any portion of this Agreement is determined to be void, unconstitutional or otherwise unenforceable, the remainder of this Agreement shall remain in full force and effect.

13. MERGER; AMENDMENT:

This MOU represents the entire agreement between the parties with respect to the matters addressed herein, and all prior agreements, covenants, and understandings between the parties concerning the same have been merged into this written MOU. This MOU shall not be altered, modified, changed, or amended except by a written instrument executed by the parties.

IN WITNESS WHEREOF, both Ciudad SWCD and MRGSQT have caused this Memorandum of Understanding to be duly executed.

**CIUDAD Soil and Water Conservation
District**

**MID RIO GRANDE STORMWATER
QUALITY TEAM**

By:
Steve Glass, Chairman

By:
Kali Bronson, Chair

Date:

Date:

Middle Rio Grande Stormwater MS4 Technical Advisory Group

MEMORANDUM OF AGREEMENT

A COOPERATIVE AGREEMENT, CREATING THE MIDDLE RIO GRANDE MS4 TECHNICAL ADVISORY GROUP, IN SUPPORT OF COMPLIANCE EFFORTS FOR A STORMWATER DISCHARGE PERMITTING SYSTEM FOR THE MIDDLE RIO GRANDE VALLEY IN ACCORDANCE WITH THE FEDERAL CLEAN WATER ACT.

WHEREAS, the United States Environmental Protection Agency (EPA), Region 6 regulates the discharge of stormwater from municipal separate storm sewer systems (MS4s) in New Mexico through the issuance of an MS4 permit for the Middle Rio Grande valley urbanized area under the authority of the National Pollutant Discharge Elimination System (NPDES) regulations (40CFR122); and

WHEREAS, the Middle Rio Grande area is comprised of many diverse local, state, federal and tribal entities, each with separate and distinct authority and responsibilities; and

WHEREAS, the Middle Rio Grande area entities potentially eligible for authorization under the proposed NPDES General Permit No. NMR04A000 (hereinafter “MS4 Permit”), and therefore are eligible to enter into this Memorandum of Agreement (hereinafter “Agreement”) in furtherance of the requirements of the MS4 Permit, are the City of Albuquerque, Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA), University of New Mexico, New Mexico Department of Transportation District 3, Bernalillo County, Sandoval County, Village of Corrales, City of Rio Rancho, Los Ranchos de Albuquerque, Kirtland Air Force Base, Town of Bernalillo, State Fairgrounds/Expo New Mexico, the Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA), the Eastern Sandoval County Arroyo Flood Control Authority (ESCAFCA), Sandia National Laboratories/Department of Energy, Pueblo of Sandia, Pueblo of Isleta, and Pueblo of Santa Ana (collectively “Stormwater Management Entities”); and

WHEREAS, the proposed MS4 Permit encourages cooperative efforts among separate local, state, federal and Tribal governments to reduce the amount of pollutants discharged with stormwater from the Middle Rio Grande urbanized area MS4s; and

WHEREAS, continued cooperation among the Stormwater Management Entities in the MS4 Permit offers an enhanced opportunity for each entity to remain aware of the requirements in the MS4 Permit and facilitate compliance with conditions of the permit;

NOW, THEREFORE, BE IT AGREED THAT:

1. The signatories to this Agreement (hereinafter collectively referred to as “Parties” and individually referred to as “Party”) support and encourage a cooperative commitment to assist one another with technical issues regarding compliance with the MS4 Permit and agree to form the Middle Rio Grande MS4 Technical Advisory Group (MS4TAG).

2. The purpose of the MS4TAG will be to exchange technical information regarding compliance with the MS4 Permit, exchange ideas among Parties regarding compliance efforts, and exchange information regarding illicit discharges detected within each Party's jurisdiction. The MS4TAG shall have no binding financial authority and shall be strictly advisory in nature.

3. Nothing in this Agreement shall be construed as obligating a Party to this agreement to expend funds for any purpose, and no Party shall be required to contribute any funds in order to participate in this Agreement. In the event the Parties determine that any joint expenditure of funds among multiple Parties becomes necessary in order to comply with the requirements of the MS4 Permit, a separate agreement shall be entered into between the affected Parties regarding any and all such expenditures at that time.

4. The term of this Agreement shall run from the date the MS4 Permit is issued by the EPA until the date the MS4 Permit is terminated or expires, whichever occurs first. This Agreement may be terminated in its entirety at any time upon the mutual agreement of all of the then-existing Parties to this Agreement. In the event any Party wishes to withdraw from this Agreement without terminating the other Parties' interests in this Agreement, withdrawal shall become effective upon ninety (90) days prior written notice to the other Parties. Withdrawal shall fully and completely terminate that Party's interest in and obligations under this Agreement. Following any Party's withdrawal, this Agreement shall continue in full force and effect as to all remaining Parties to the extent possible.

5. This Agreement does not address the "Public Education and Outreach" or "Cooperative Sampling" sections of the MS4 Permit. Any MS4TAG efforts regarding either of these sections of the MS4 Permit under this Agreement shall be strictly in furtherance of the spirit of cooperation intended among the Parties. Each Party acknowledges its obligations under the "Public Education and Outreach" and "Cooperative Sampling" sections of the MS4 Permit are separate and apart from its activities under this Agreement, and a separate agreement will be required for any collaboration among the Parties with respect to those permit requirements.

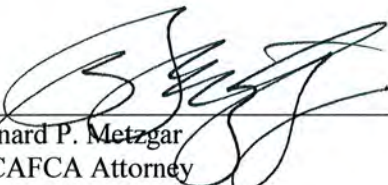
6. The Parties will appoint two (2) Co-Coordiators from among the Parties, one of which must be from a Party located within the Bernalillo County geographical area and one of which must be from a Party located within the Sandoval County geographical area. Appointment of a Co-Coordinator shall be by majority vote of the voting Parties, with only those Parties located in the county of Bernalillo voting on the Co-Coordinator from that area, and only those Parties located in the county of Sandoval voting on the Co-Coordinator from that area. Co-Coordiators must be appointed annually in each subsequent permit year, or earlier if the position becomes vacant for any reason. For the New Mexico Department of Transportation District 3, which operates stormwater management facilities in both counties, for the purposes of this section, they shall select one county affiliation in year one of the agreement and alternate affiliations in subsequent years of this Agreement. The Co-Coordiators will be expected to coordinate the Parties' efforts under this Agreement, including facilitating meetings of the MS4TAG at least monthly for the first year of the MS4 Permit. In years two through five of the permit, the frequency of meetings may be reduced to quarterly with additional meetings called as necessary to discuss issues regarding MS4 Permit compliance.

7. Each Party shall be entitled to one (1) vote on any action items.
8. This Agreement creates no obligations on behalf of any Party to any other Party to this Agreement, including for any requirements imposed or determinations made by EPA. The Parties acknowledge and agree that each shall at all times remain individually liable for full compliance with the requirements of the MS4 Permit, including EPA's determination regarding the implementation schedule.
9. This Agreement may be modified in writing at any time upon the mutual agreement of the Parties.
10. Parties can be added at any time during the life of this Agreement. A potential future Party's submittal of a signature page to the Co-Coordiators and approval by the Co-Coordiators shall add the Party to the Agreement.

MIDDLE RIO GRANDE STORMWATER
MS4 TECHNICAL ADVISORY GROUP
FINAL

10-07-13

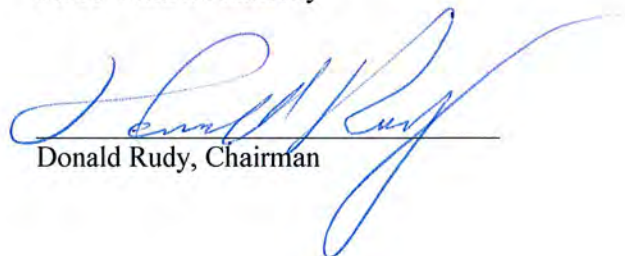
Approved as to Form:


Bernard P. Metzgar
SSCAFCA Attorney

Date: 10/04/13

Southern Sandoval County Arroyo
Flood Control Authority

Date: 10/18/13

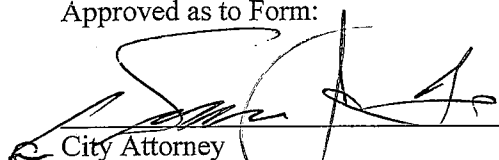

Donald Rudy, Chairman

MIDDLE RIO GRANDE STORMWATER
MS4 TECHNICAL ADVISORY GROUP
FINAL DRAFT

9-30-13

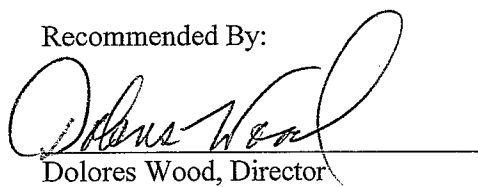
City of Rio Rancho

Approved as to Form:


City Attorney

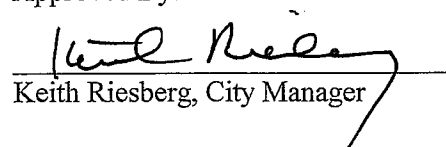
Date: 10/1/13

Recommended By:


Dolores Wood, Director

Date: 11.4.13

Approved By:



Keith Riesberg, City Manager

Date: 11/1/13

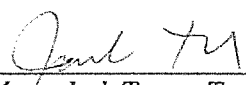
MIDDLE RIO GRANDE STORMWATER
MS4 TECHNICAL ADVISORY GROUP
FINAL DRAFT

9-30-13

Approved as to Form:


George Perez
Town of Bernalillo Attorney

Date: 10/15/2013


Mayor Jack Torres, Town of Bernalillo


Date: 10/14/13

Attest: 
Ida Fierro, Town Clerk

Date: 10/14/13

10-07-13

VILLAGE OF CORRALES

By:  10-08-13
Philip Gasteyer, Mayor Date

Attest:

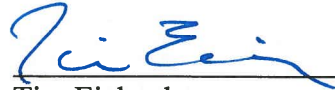
 10-08-2013
Juan Reyes, Village Clerk Date

10-07-13

IN WITNESS WHEREOF, the undersigned have caused this Agreement to be executed.

**Albuquerque Metropolitan Arroyo
Flood Control Authority**

Date: 10/24/2013



Tim Eichenberg
Chair of the Board of Directors

Attest:

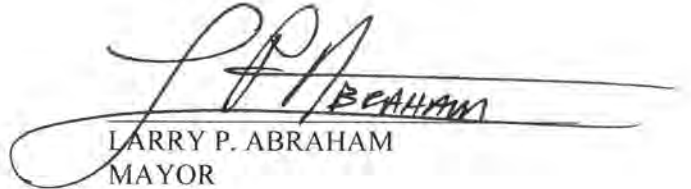


Bruce Thomson
Secretary/Treasurer


Date: 10/24/13

VILLAGE OF LOS RANCHOS DE ALBUQUERQUE

Date: November 14, 2013


LARRY P. ABRAHAM
MAYOR

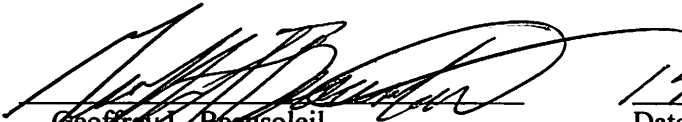
(SEAL)


STEHANIE DOMINGUEZ
VILLAGE CLERK

Accepted on behalf of:

U.S. DEPARTMENT OF ENERGY
NATIONAL NUCLEAR SECURITY ADMINISTRATION
SANDIA FIELD OFFICE

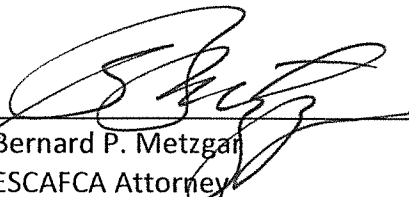
By:


Geoffrey L. Beausoleil
Manager

14 NOV 2013
Date

MIDDLE RIO GRANDE STORMWATER
MS4 TECHNICAL ADVISORY GROUP
FINAL

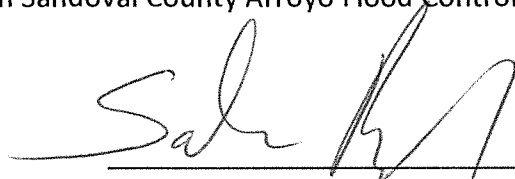
Approved as to Form:


Bernard P. Metzgar
ESCAFCA Attorney

Date: 11/14/13

Eastern Sandoval County Arroyo Flood Control Authority

Date: NOV. 19, 2013


Salvador Reyes, Chairman

UNIVERSITY OF NEW MEXICO

Approved by:

 Date: 12/17/13
David Harris, Executive Vice President

Recommended by:


 Date: 12-10-13
Carla P. Domenici, Director
Safety and Risk Services Department

MIDDLE RIO GRANDE STORMWATER
MS4 TECHNICAL ADVISORY GROUP
FINAL

10-07-13

New Mexico Department of Transportation


Approved By:



Timothy L. Parker, M.S., P.E.
NMDOT District Three Engineer

Date: 12/22/13

Approved As To Form Only:



Ken Swain, Assistant General Counsel
Office of the General Counsel

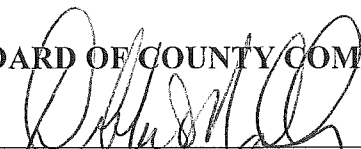
Date: 12/18/2013

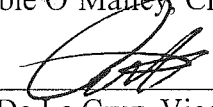
BERNALILLO COUNTY

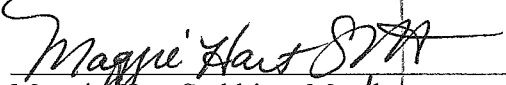
Motion to: Approve a Memorandum of Agreement (MOA) joining the County with other local entities participating in the Middle Rio Grande MS4 Technical Advisory Group (MS4TAG).

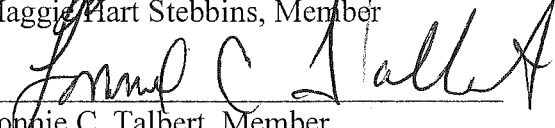
Approved this 28th day of January, 2014

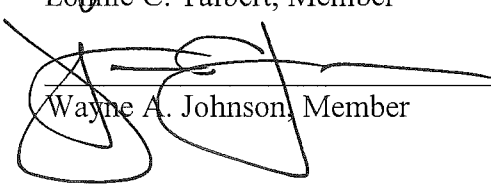
BOARD OF COUNTY COMMISSIONERS


Debbie O'Malley, Chair


Art De La Cruz, Vice Chair


Maggie Hart Stebbins, Member


Lonnie C. Talbert, Member



Wayne A. Johnson, Member

APPROVED AS TO FORM:


County Attorney

Date: 1/28/14

ATTEST:


Maggie Toulouse Oliver, County Clerk

Date: 1/28/14



MIDDLE RIO GRANDE STORMWATER
MS4 TECHNICAL ADVISORY GROUP
FINAL

10-07-13

Approved as to Form:



Patrick F. Trujillo
Sandoval County Attorney

Date: 1/27/2014

Sandoval County

Date: 2/6/2014

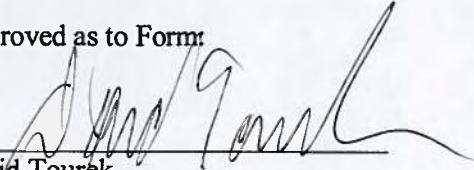


Phillip Rios, County Manager

MIDDLE RIO GRANDE STORMWATER
MS4 TECHNICAL ADVISORY GROUP
FINAL

10-07-13

Approved as to Form:

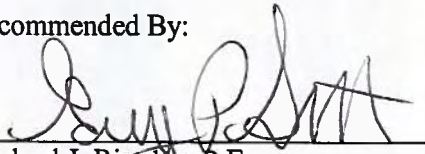


David Tourek
City Attorney

Date:

2/24/14

Recommended By:




Michael J. Riordan, P.E.
Director, Department of Municipal Development

Date:

2/26/14

Approved By:



Robert J. Perry
Chief Administrative Officer

Date:

3/4/14

Middle Rio Grande Stormwater MS4 Compliance Monitoring Cooperative

INTERGOVERNMENTAL AGREEMENT

AN INTERGOVERNMENTAL AGREEMENT, CREATING THE MIDDLE RIO GRANDE MS4 COMPLIANCE MONITORING COOPERATIVE, IN SUPPORT OF COMPLIANCE EFFORTS FOR A STORMWATER DISCHARGE PERMITTING SYSTEM FOR THE MIDDLE RIO GRANDE VALLEY IN ACCORDANCE WITH THE FEDERAL CLEAN WATER ACT.

RECITALS

WHEREAS, the United States Environmental Protection Agency (EPA), Region 6 regulates the discharge of stormwater from municipal separate storm sewer systems (MS4s) in central New Mexico through the issuance of an MS4 permit for the Middle Rio Grande valley urbanized area, under the authority of the National Pollutant Discharge Elimination System (NPDES) regulations (40CFR122); and

WHEREAS, the Middle Rio Grande valley urbanized area is comprised of many diverse local, state, federal and tribal entities, each with separate and distinct authority and responsibilities; and

WHEREAS, the Middle Rio Grande valley urbanized area entities that are eligible for authorization under NPDES General Permit No. NMR04A000 (hereinafter “MS4 Permit”), and therefore eligible to enter into this Intergovernmental Agreement (hereinafter “Agreement”) in furtherance of the requirements of the MS4 Permit, are the City of Albuquerque, Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA), University of New Mexico, New Mexico Department of Transportation District 3, Bernalillo County, Sandoval County, Village of Corrales, City of Rio Rancho, Village of Los Ranchos de Albuquerque, Kirtland Air Force Base, Town of Bernalillo, State Fairgrounds/Expo New Mexico, Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA), Eastern Sandoval County Arroyo Flood Control Authority (ESCAFCA), Sandia National Laboratories/Department of Energy, Pueblo of Sandia, Pueblo of Isleta, and Pueblo of Santa Ana (collectively “Co-permittees”); and

WHEREAS, the proposed MS4 Permit requires each Co-permittee to obtain and report stormwater compliance monitoring results in their MS4 Annual Report; and

WHEREAS, the proposed MS4 Permit encourages cooperative efforts among the Co-permittees, including compliance monitoring activities, to reduce the amount of pollutants discharged with stormwater into the Rio Grande; and

WHEREAS, cooperation among the Co-permittees in the MS4 Permit through the Middle Rio Grande Compliance Monitoring Cooperative (“CMC”), with regard to monitoring requirements, offers the opportunity to reduce each individual Co-permittee’s monitoring costs by cooperatively developing, funding, and executing a common monitoring plan without reducing the effectiveness of the monitoring plan.

MIDDLE RIO GRANDE STORMWATER
MS4 COMPLIANCE MONITORING COOPERATIVE
INTERGOVERNMENTAL AGREEMENT
FINAL

04-26-2016

a Members cash contribution, provided however, that participation in the CMC shall not be considered in-kind contributions. The value of in-kind contributions will be determined by the membership of the CMC by equating the value of the service to the cost that would be paid by the membership of the CMC to have the in-kind service performed by a third party (non-CMC member) contractor. The Contribution Schedule is located in Attachment 1 to this Agreement. This Contribution Schedule may be modified by the CMC annually without requiring modification to this agreement, provided however, that it shall be adopted by unanimous vote of the Members. Any funds remaining at the end of the Agreement Year will be carried into the next Calendar Year of this agreement. In such event, the CMC may either elect to retain the excess funds from the prior Calendar Year as a contingency fund, or may lower the annual contribution schedules for that year for all Members in equal proportion, based on the total amount carried forward. In the event a Member does not have the resources to provide full payment for any funds required by the Contribution Schedule, the remaining Members may agree, by unanimous vote, amend the Contribution Schedule if it is in the best interest of the CMC. Each Member's obligations under this Agreement are contingent upon sufficient appropriations being made therefor by such Member's governing body sufficient to fulfill such Member's said obligations. If such appropriations are insufficient to such Member's obligations hereunder, such Member's shall promptly notify the other Members, and this Agreement shall terminate forthwith with respect to such Member.

7. **FISCAL AGENT.** The Members shall select one (1) Co-permittee to act as Fiscal Agent for the CMC for the purposes of this Agreement. The Fiscal Agent shall act as the custodian of the CMC's funds, securities, and property. All funds will be held in a separate bank account for the purposes of this Agreement. All CMC funds shall be deposited promptly by the Fiscal Agent to the credit of the CMC. The CMC shall adhere to the Fiscal Agent's accounting and procurement procedures, provided such procedures comply with law. The Fiscal Agent shall make available to any interested Member, all records, receipts, and other documentation with respect to all matters concerning this agreement and shall have this account included in its annual audit. The Fiscal Agent shall maintain funds in accordance with all applicable state and Federal statutes. The Fiscal Agent shall be authorized on the CMC's behalf to sign checks, drafts, or other instruments for payment of money, acceptances, notes, or other evidences of indebtedness, to enter into contracts, or to execute and deliver other documents and instruments. This authority to enter into any contract or negotiated agreement shall be subject to approval by the CMC and subject to any limitations as set forth in this Agreement. Subject to the provisions of this Agreement, no loans shall be contracted on behalf of the CMC and no evidence of indebtedness shall be issued in its name unless authorized by a unanimous vote of the CMC Members. In consideration of the in-kind contributions anticipated from the Fiscal Agent, the total financial contribution requirements of the Fiscal Agent's Member agency, under any applicable agreement, shall be credited by the sum of one thousand dollars (\$1,000.00) for the term of the permit in which that Member serves as the Fiscal Agent.

8. **PAYMENTS.** The Fiscal Agent will invoice each Member for their respective participation, minus the values of any CMC approved in-kind contributions at the start of each member entity's Fiscal Year. Each Member will pay such invoices to the Fiscal Agent within

MIDDLE RIO GRANDE STORMWATER
MS4 COMPLIANCE MONITORING COOPERATIVE
INTERGOVERNMENTAL AGREEMENT
FINAL

04-26-2016

standing of the CMC, contracts may be used, with concurrence from all Members of the CMC, that have been issued by Members to perform elements of the monitoring program. If a contractor is used that has been procured by a Member in good standing of the CMC instead of the Fiscal Agent, then, with concurrence of the other Members of the CMC, an entity that is not the Fiscal Agent for the CMC may contract to have the services performed and upon successful completion of the services, submit an invoice, with no mark-up, to the Fiscal Agent for reimbursement. Reimbursement shall only be authorized for reasonable and necessary costs. All contractor's utilized for the purposes identified in this Agreement shall be procured in accordance with the State Procurement Code. Contractors will be agents of the Member issuing the contract. Other Members of the CMC shall not be bound by the terms of the contract.

13. **EVALUATION.** The Members agree that the Stormwater Monitoring contract is an ongoing program. The effectiveness of the Stormwater Monitoring contract, with regard to permit compliance, will be evaluated by the CMC prior to annual renewal(s) or request for proposals.

14. **LIMITATION ON SAMPLING ACTIVITIES.** The contractor's scope of services will be limited to the CMC-developed and EPA approved sampling plan and associated reporting. If, in the event of an exceedence during routine monitoring events, additional investigation is required by the EPA to identify the source of a potential contaminant, the CMC may expand monitoring activities to the degree necessary to locate the likely entry point of the potential contaminants. Once the likely entry point is identified, further investigation into the source of the potential contaminant will become the responsibility of the specific Co-permittee(s) having jurisdiction at the location where the likely entry occurred. The CMC shall have no responsibility, fiscal or otherwise, to investigate potential sources of contamination outside of the river or its affiliated Middle Rio Grande Conservancy District-owned water conveyances.

15. **PARTICIPATION AFFECTED.** If any situation arises which adversely affects any Member's participation in this Agreement, said Member will immediately, and in writing, notify the other Members. Any circumstance that materially affects this Agreement will be promptly and equitably resolved by all Members and if necessary, an amendment to this Agreement shall be executed.

16. **COMPLIANCE WITH GOVERNING LAWS.** The obligations of each Member under this Agreement shall be performed in compliance with all applicable laws, statutes, and ordinances. Nothing herein is intended to constitute any agreement for the Members to perform any activity in violation of the Constitution or Laws of the State of New Mexico or the Ordinances of any Co-permittee that is a Member of this Agreement.

17. **SEVERABILITY.** If any clause or provision of this Agreement is illegal, invalid or unenforceable, under present or future laws effective during the term of this Agreement, then and in that event, it is the intention of the Members hereto that the remainder of this Agreement shall not be affected thereby.

MIDDLE RIO GRANDE STORMWATER
MS4 COMPLIANCE MONITORING COOPERATIVE
INTERGOVERNMENTAL AGREEMENT
FINAL

04-26-2016

EACH ENTITY WILL EXECUTE AGREEMENT INDIVIDUALLY. SIGNATURE PAGES
WILL BE CONSOLIDATED INTO SINGLE DOCUMENT

**Albuquerque Metropolitan Arroyo
Flood Control Authority**



Bruce M. Thomson, Chair
Board of Directors



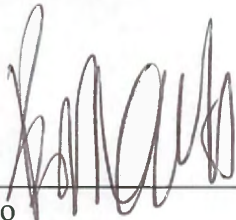
Date

Attest:



Ronald D. Brown, Secretary-Treasurer
Board of Directors

Approved as to Form:



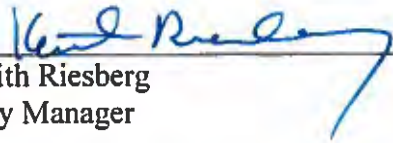
Randy Autio
AMAFCA Attorney

Date: 

MIDDLE RIO GRANDE STORMWATER
MS4 COMPLIANCE MONITORING COOPERATIVE
INTERGOVERNMENTAL AGREEMENT
FINAL

5-24-2016

City of Rio Rancho

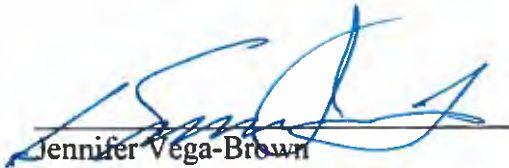


Keith Riesberg
City Manager

5/27/16

Date

Approved as to Form:



Jennifer Vega-Brown
City Attorney

Date: 5/26/16

Date for of beginning of Fiscal Year: July 1

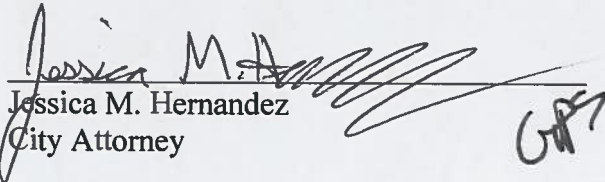
MIDDLE RIO GRANDE STORMWATER
MS4 COMPLIANCE MONITORING COOPERATIVE
INTERGOVERNMENTAL AGREEMENT
FINAL

04-26-2016

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City of Albuquerque

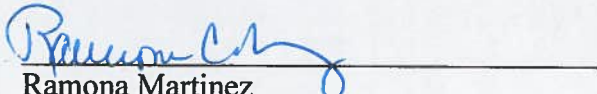
Approved as to Form


Jessica M. Hernandez
City Attorney

6/15/16
Date

Purchasing Approval

:


Ramona Martinez
Chief Procurement Officer

6/16/16
Date

Recommended By:


Melissa Lozoya
Director, Department of Municipal Development

6/16/16
Date

Approved By


Robert J. Perry
Chief Administrative Officer

6/17/16
Date

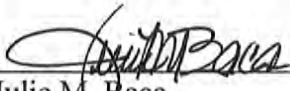
Date for of beginning of Fiscal Year: July 1

ATTACHMENT 1

CONTRIBUTION SCHEDULE


County of Bernalillo:

APPROVED BY:



Julie M. Baca Date
Bernalillo County Manager

RECOMMENDED BY:



Roger A. Paul, P.E. Date
Deputy County Manager for Public Works

APPROVED AS TO FORM ONLY:



for Deputy County Attorney Date
4-24-2016

MIDDLE RIO GRANDE STORMWATER
MS4 COMPLIANCE MONITORING COOPERATIVE
INTERGOVERNMENTAL AGREEMENT
FINAL

04-26-2016

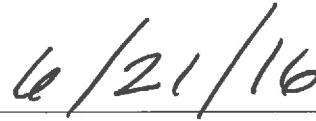
EACH ENTITY WILL EXECUTE AGREEMENT INDIVIDUALLY. SIGNATURE PAGES
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Village of Los Ranchos de Albuquerque

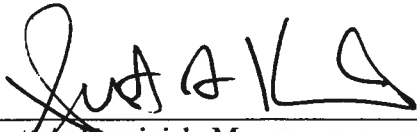


Kelly Ward
Administrator

Date





Village of Corrales

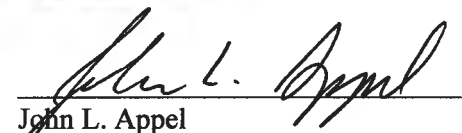


Scott A. Rominiak, Mayor

5/26/16
Date

Jennifer W. Wise, Village Clerk
Approved as to Form:



John L. Appel
Coppler Law Firm P.C.
Village of Corrales Attorney

5/26/16
Date

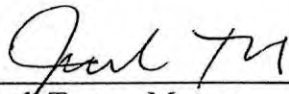
Date for beginning of Fiscal Year: July 1

MIDDLE RIO GRANDE STORMWATER
MS4 COMPLIANCE MONITORING COOPERATIVE
INTERGOVERNMENTAL AGREEMENT
FINAL

04-26-2016

EACH ENTITY WILL EXECUTE AGREEMENT INDIVIDUALLY. SIGNATURE PAGES
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Town of Bernalillo

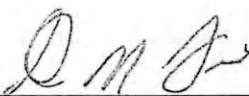


Jack Torres, Mayor
Board of Directors

5/23/2016

Date

Attest:



Ida Fierro, Town Clerk

Date for of beginning of Fiscal Year: July 1

MIDDLE RIO GRANDE STORMWATER
MS4 COMPLIANCE MONITORING COOPERATIVE
INTERGOVERNMENTAL AGREEMENT
FINAL

04-26-2016

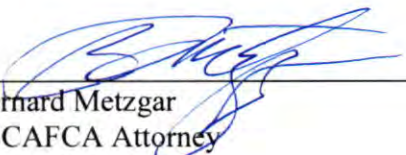
EACH ENTITY WILL EXECUTE AGREEMENT INDIVIDUALLY. SIGNATURE PAGES
WILL BE CONSOLIDATED INTO SINGLE DOCUMENT

**Southern Sandoval County Arroyo
Flood Control Authority**


James Fahey, M.D., Chair
Board of Directors

5/20/16
Date

Approved as to Form:


Bernard Metzgar
SSCAFCA Attorney

Date: 5/20/16

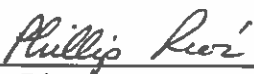
Date for of beginning of Fiscal Year: July 1

MIDDLE RIO GRANDE STORMWATER
MS4 COMPLIANCE MONITORING COOPERATIVE
INTERGOVERNMENTAL AGREEMENT
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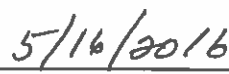
04-26-2016

EACH ENTITY WILL EXECUTE AGREEMENT INDIVIDUALLY. SIGNATURE PAGES
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**Sandoval County, New Mexico
Flood Control Authority**



Phillip Rios
County Manager

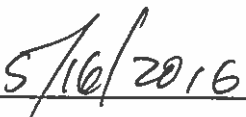


Date

Approved as to Form:



Patrick Trujillo
Sandoval County Attorney

Date: 

Date for of beginning of Fiscal Year: July 1

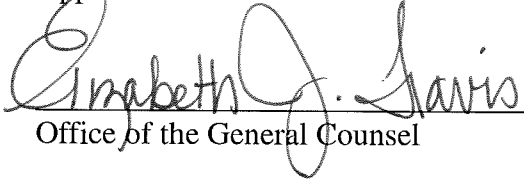
MIDDLE RIO GRANDE STORMWATER
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04-26-2016

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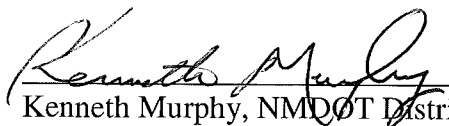
**New Mexico Department of Transportation -
District 3**

Approved as to Form:


Office of the General Counsel

6.29.2016
Date

Approved By:


Kenneth Murphy, NMDOT District Three Engineer

7/2/16
Date

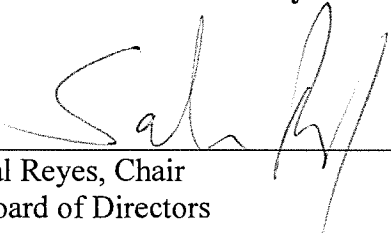
Date for of beginning of Fiscal Year: July 1

MIDDLE RIO GRANDE STORMWATER
MS4 COMPLIANCE MONITORING COOPERATIVE
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04-26-2016

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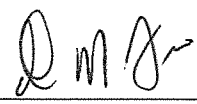
**Eastern Sandoval County Arroyo
Flood Control Authority**



Sal Reyes, Chair
Board of Directors


Date May 25, 2016

Attest:



Ida Fierro, Secretary
Board of Directors

Approved as to Form:



Bernie Metzgar
ESCAFCA Attorney

Date: _____

ATTACHMENT 1

Sampling Cooperative Cost Allocation Determination (CAD) Tool

28-Apr-16

Number	Participant			ENTITY PAYMENT	FISCAL AGENT CREDIT (\$1k)
			\$ 132,000.00		
1	City of Albuquerque	1.38	\$ 45,574.50	\$45,600.00	
2	AMAFCA	0.43	\$ 14,319.39	\$14,400.00	\$ (1,000.00)
3	UNM	0.41	\$ 13,553.53	\$13,600.00	
4	NMDOT	0.12	\$ 3,865.56	\$3,900.00	
5	Bernalillo County	0.59	\$ 19,549.95	\$19,600.00	
6	Sandoval County	0.46	\$ 15,094.20	\$15,100.00	
7	Village of Corrales	0.04	\$ 1,393.20	\$1,400.00	
8	City of Rio Rancho	0.42	\$ 13,997.46	\$14,000.00	
9	Los Ranchos de Albuquerque	0.02	\$ 705.79	\$1,000.00	
10	Town of Bernalillo	0.03	\$ 903.81	\$1,000.00	
11	ESCAFCA	0.01	\$ 338.88	\$500.00	
12	SSCAFCA	0.08	\$ 2,703.72	\$2,900.00	
	Ratio Check (Sum = Weighting Factor)	4.00		\$132,000.00	



THE UNIVERSITY of NEW MEXICO

*Department of Safety and Risk Services (SRS)
MSC07 4100*

*1 University of New Mexico
Albuquerque, NM 87131-0001
Phone: (505)277-2753 Fax: (505)277-9006
srs.unm.edu*

August 14, 2017

Mr. Jerry Lovato, Executive Engineer
Albuquerque Metropolitan Arroyo Flood Control Authority
2600 Prospect Ave NE
Albuquerque, NM 87107

RE: Memorandum of Understanding for Delegation of Authority for Data Entry into netDMR System

Dear Mr. Lovato,

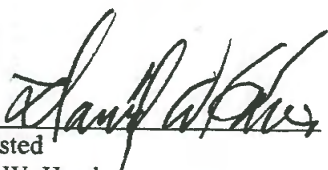
As you are aware, twelve of the permittees under NPDES Permit No. NMR04A000 (Permit) have entered into a cooperative agreement for the performance of permit-mandated water quality monitoring. Currently, results from the samples taken during monitoring events are shared among the twelve members of the Compliance Monitoring Cooperative (CMC) and must be entered by each entity into the netDMR database individually, creating twelve identical (barring typos or other data entry error) records. This is clearly inefficient, at best.

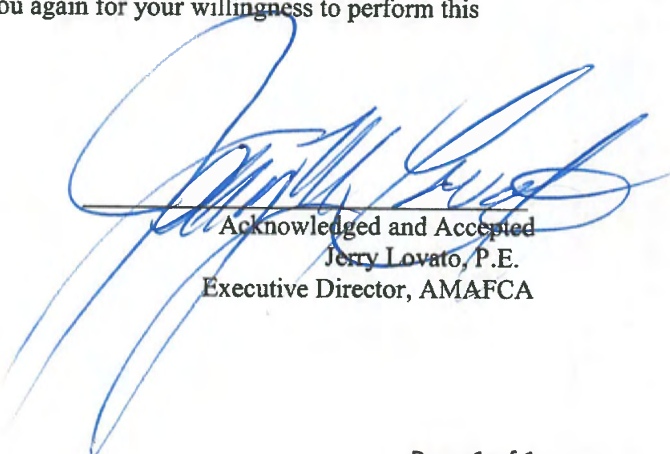
Following discussions between the CMC and the EPA, the EPA has approved a methodology whereby one member of the CMC will enter data in netDMR on behalf of any other CMC-member entity. Each CMC-member entity that wishes to participate will delegate authority to the data entry CMC-member entity or their designed contractor, for this purpose. We appreciate Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) volunteering to be the data entry CMC entity on behalf of the CMC.

Therefore, the University of New Mexico (UNM), permit number NMR04A013, hereby delegates authority for data entry and approval of sampling results into netDMR to AMAFCA for the purposes of compliance with Permit requirements. Please provide us notification of the completion of data entry via email for our records.

In the event that AMAFCA becomes unable to perform this function on behalf of UNM, please notify me a minimum of 60 days prior to the deadline for data entry so that we may arrange to perform this function internally.

If you have any questions or need any clarification regarding this letter, please feel free to contact Chemanji Shu-Nyamboli cschu@unm.edu or at 505-277-2766. Thank you again for your willingness to perform this operation on behalf of the membership of the CMC.


Requested
David W. Harris
Executive Vice President, Administration, COO, CFO, UNM


Acknowledged and Accepted
Jerry Lovato, P.E.
Executive Director, AMAFCA



District 3 – New Mexico Department of Transportation
7500 Pan American Blvd.
Albuquerque, NM 87109

August 15, 2017

Mr. Jerry Lovato, Executive Engineer
Albuquerque Metropolitan Arroyo Flood Control Authority
2600 Prospect Ave NE
Albuquerque, NM 87107

RE: Memorandum of Understanding for Delegation of Authority for Data Entry into netDMR System

Dear : Mr. Lovato,

As you are aware, twelve of the permittees under NPDES Permit No. NMR04A000 (Permit) have entered into a cooperative agreement for the performance of permit-mandated water quality monitoring. Currently, results from the samples taken during monitoring events are shared among the twelve members of the Compliance Monitoring Cooperative (CMC) and must be entered by each entity into the netDMR database individually, creating twelve identical (barring typos or other data entry error) records. This is clearly inefficient, at best.

Following discussions between the CMC and the EPA, the EPA has approved a methodology whereby one member of the CMC will enter data in netDMR on behalf of any other CMC-member entity. Each CMC-member entity that wishes to participate will delegate authority to the data entry CMC-member entity or their designated contractor, for this purpose. We appreciate Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) volunteering to be the data entry CMC entity on behalf of the CMC.

Therefore, the New Mexico Department of Transportation District 3, permit number NMR04A010, hereby delegates authority for data entry and approval of sampling results into netDMR to AMAFCA for the purposes of compliance with Permit requirements. Please provide us notification of the completion of data entry via email for our records.

In the event that AMAFCA becomes unable to perform this function on behalf of NMDOT District 3, please notify me a minimum of 60 days prior to the deadline for data entry so that we may arrange to perform this function internally.

Susana Martinez
Governor

Tom Church
Cabinet Secretary

Commissioners

Ronald Schmeits
Chairman
District 4

Dr. Kenneth White
Secretary
District 1

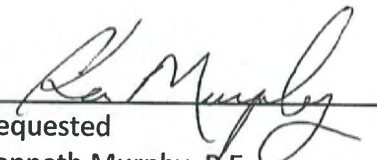
David Sepich
Commissioner
District 2

Keith Mortensen
Commissioner
District 3

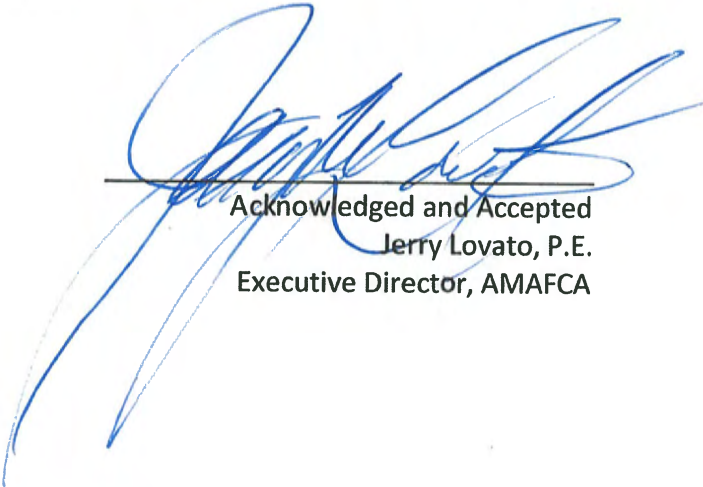
Butch Mathews
Commissioner
District 5

Jackson Gibson
Commissioner
District 6

If you have any questions or need any clarification regarding this letter, please feel free to contact me at 505-798-6630, or Tim Trujillo at 505-798-6690 or TimothyR.Trujillo@state.nm.us. Thank you again for your willingness to perform this operation on behalf of the CMC membership.



Requested
Kenneth Murphy, P.E.
NMDOT District Three Engineer



Acknowledged and Accepted
Jerry Lovato, P.E.
Executive Director, AMAFCA



County of Bernalillo

State of New Mexico

Technical Services Department

2400 Broadway SE, Building N
Albuquerque, New Mexico 87102
Office: (505) 848-1500 Fax: (505) 848-1510
www.bernco.gov

August 9, 2017

Mr. Jerry Lovato, Executive Engineer
Albuquerque Metropolitan Arroyo Flood Control Authority
2600 Prospect Ave NE
Albuquerque, NM 87107

RE: Memorandum of Understanding for Delegation of Authority for Data Entry into netDMR System

Dear Mr. Lovato,

As you are aware, twelve of the permittees under NPDES Permit No. NMR04A000 (Permit) have entered into a cooperative agreement for the performance of permit-mandated water quality monitoring. Currently, results from the samples taken during monitoring events are shared among the twelve members of the Compliance Monitoring Cooperative (CMC) and must be entered by each entity into the netDMR database individually, creating twelve identical (barring typos or other data entry error) records. This is clearly inefficient, at best.

Following discussions between the CMC and the EPA, the EPA has approved a methodology whereby one member of the CMC will enter data in netDMR on behalf of any other CMC-member entity. Each CMC-member entity that wishes to participate will delegate authority to the data entry CMC-member entity or their designed contractor, for this purpose. We appreciate Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) volunteering to be the data entry CMC entity on behalf of the CMC.

Therefore, Bernalillo County hereby delegates authority for data entry and approval of sampling results into netDMR to AMAFCA for the purposes of compliance with Permit requirements. Please provide us notification of the completion of data entry via email for our records.

In the event that AMAFCA becomes unable to perform this function on behalf of Bernalillo County, please notify me a minimum of 60 days prior to the deadline for data entry so that we may arrange to perform this function internally.

If you have any questions or need any clarification regarding this letter, please feel free to contact me at kbronson@bernco.gov or at 505-848-1544. Thank you again for your willingness to perform this operation on behalf of the membership of the CMC.

Kali Bronson
Stormwater Program Compliance Manager, Bernalillo County

Jerry Lovato, P.E.
Executive Director, AMAFCA

COMMISSIONERS

Debbie O'Malley, Chair, District 1 Steven Michael Quezada, Vice Chair, District 2
Maggie Hurt Stebbins, Member, District 3 Lonnie C. Talbert, Member, District 4 Wayne A. Johnson, Member, District 5

ELECTED OFFICIALS

Tanya R. Giddings, Assessor Linda Stover, Clerk Willow Misty Parks, Probate Judge Manuel Gonzales III, Sheriff Nancy M. Bearce, Treasurer

COUNTY MANAGER
Julie Morgas Baca

August 3, 2017

Mr. Jerry Lovato, Executive Engineer
Albuquerque Metropolitan Arroyo Flood Control Authority
2600 Prospect Ave NE
Albuquerque, NM 87107

RE: Memorandum of Understanding for Delegation of Authority for Data Entry into netDMR System

Dear Mr. Lovato,

As you are aware, twelve of the permittees under NPDES Permit No. NMR04A000 (Permit) have entered into a cooperative agreement for the performance of permit-mandated water quality monitoring. Currently, results from the samples taken during monitoring events are shared among the twelve members of the Compliance Monitoring Cooperative (CMC) and must be entered by each entity into the netDMR database individually, creating twelve identical (barring typos or other data entry error) records. This is clearly inefficient, at best.

Following discussions between the CMC and the EPA, the EPA has approved a methodology whereby one member of the CMC will enter data in netDMR on behalf of any other CMC-member entity. Each CMC-member entity that wishes to participate will delegate authority to the data entry CMC-member entity or their designed contractor, for this purpose. We appreciate Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) volunteering to be the data entry CMC entity on behalf of the CMC.

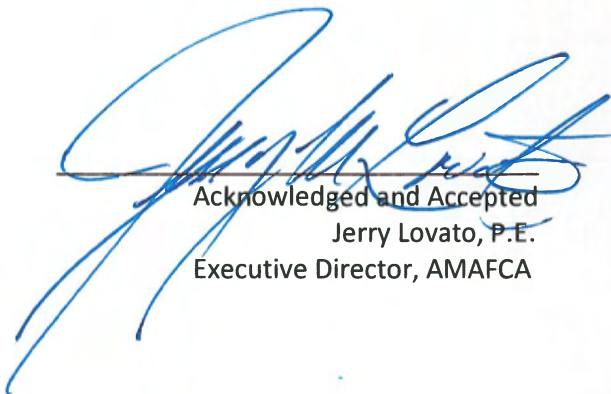
Therefore, Sandoval County, permit number NMR04A003, hereby delegates authority for data entry and approval of sampling results into netDMR to AMAFCA for the purposes of compliance with Permit requirements. Please provide us notification of the completion of data entry via email for our records.

In the event that AMAFCA becomes unable to perform this function on behalf of Sandoval County, please notify me a minimum of 60 days prior to the deadline for data entry so that we may arrange to perform this function internally.

If you have any questions or need any clarification regarding this letter, please feel free to contact Fred Marquez at fmarquez@sandovalcountynm.gov or at 505-306-4706. Thank you again for your willingness to perform this operation on behalf of the membership of the CMC.



Requested
Dianne Maes, CPM
County Manager, Sandoval County



Acknowledged and Accepted
Jerry Lovato, P.E.
Executive Director, AMAFCA





VILLAGE OF CORRALES

SCOTT KOMINIAK
MAYOR

July 3, 2017

Mr. Jerry Lovato, Executive Engineer
Albuquerque Metropolitan Arroyo Flood Control Authority
2600 Prospect Ave NE
Albuquerque, NM 87107

RE: Delegation of Authority for Data Entry into netDMR System

Dear Mr. Lovato,

As you are aware, twelve of the permittees under NPDES Permit No. NMR04A000 (Permit) have entered into a cooperative agreement for the performance of permit-mandated water quality monitoring. Currently, results from the samples taken during monitoring events are shared among the twelve members of the Compliance Monitoring Cooperative (CMC) and must be entered by each entity into the netDMR database individually, creating twelve identical (barring typos or other data entry error) records. This is clearly inefficient, at best.


Following discussions between the CMC and the EPA, the EPA has approved a methodology whereby one member of the CMC will enter data in netDMR on behalf of any other CMC-member entity. Each CMC-member entity that wishes to participate will delegate authority to the data entry CMC-member entity or their designed contractor, for this purpose. We appreciate Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) volunteering to be the data entry CMC entity on behalf of the CMC.

Therefore, the Village of Corrales hereby delegates authority for data entry and approval of sampling results into netDMR to AMAFCA for the purposes of compliance with Permit requirements. Please provide us notification of the completion of data entry via email for our records.

In the event that AMAFCA becomes unable to perform this function on behalf of Corrales, please notify me a minimum of 60 days prior to the deadline for data entry so that we may arrange to perform this function internally.

If you have any questions or need any clarification regarding this letter, please feel free to contact me at javila@corrales-nm.org or at 505-897-0502. Thank you again for your willingness to perform this operation on behalf of the membership of the CMC.

Sincerely,



John Avila,
Village Administrator, Corrales



City of Rio Rancho

3200 Civic Center Circle NE
Rio Rancho, New Mexico 87144-4501
(505) 981-5002 • FAX (505) 981-7274

August 15, 2017

Mr. Jerry Lovato, Executive Engineer
Albuquerque Metropolitan Arroyo Flood Control Authority
2600 Prospect Ave NE
Albuquerque, NM 87107

RE: Memorandum of Understanding for Delegation of Authority for Data Entry into NetDMR System

Dear Mr. Lovato,


As you are aware, twelve permittees covered under the Middle Rio Grande Watershed Based Municipal Separate Storm Sewer System (MS4) General Permit (NPDES No. NMR04A000) have entered into a cooperative agreement for the performance of permit-mandated water quality monitoring. Currently, results from the samples taken during monitoring events are shared among the twelve members of the Compliance Monitoring Cooperative (CMC) and must be entered by each entity into the Network Discharge Monitoring Report (NetDMR) database individually, creating twelve identical (barring typos or other data entry error) records. This is clearly inefficient, at best.

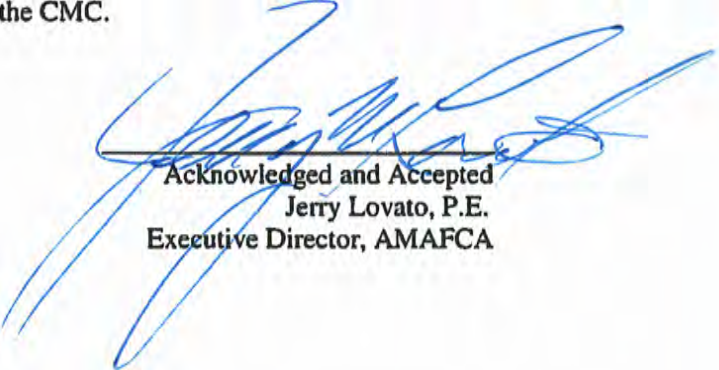
Following discussions between the CMC and the Environmental Protection Agency (EPA), EPA has approved a methodology whereby one member of the CMC will enter data in NetDMR on behalf of any other CMC-member entity. Each CMC-member entity that wishes to participate will delegate authority to the data entry CMC-member entity or their designed contractor, for this purpose. We appreciate Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) volunteering to be the data entry CMC entity on behalf of the CMC.

Therefore, the City of Rio Rancho, Permit Tracking No. NMR04A007, hereby delegates authority for data entry and approval of sampling results into NetDMR to AMAFCA for the purposes of compliance with MS4 General Permit requirements. Please provide us notification, via email, of the completion of data entry for our records.

In the event that AMAFCA becomes unable to perform this function on behalf of the City of Rio Rancho, please notify me a minimum of 60 days prior to the deadline, or by December 1st, for data entry in order to perform this function internally.

Please contact Xavier Pettes via email at xpettes@rrnm.gov or phone at (505)891-5045 if you have questions or concerns regarding this memorandum. Thank you again for your willingness to perform this function on behalf of the membership of the CMC.


Requested
Keith Riesberg
City Manager, City of Rio Rancho


Acknowledged and Accepted
Jerry Lovato, P.E.
Executive Director, AMAFCA



MAYOR
LARRY P. ABRAHAM

ADMINISTRATOR
KELLY S. WARD

— • • • —

TRUSTEES
DON LOPEZ
MAYOR PRO-TEM

PABLO RUEL
MARY HOMAN
ALLEN LEWIS

August 8, 2017

Mr. Jerry Lovato, Executive Engineer
Albuquerque Metropolitan Arroyo Flood Control Authority
2600 Prospect Ave NE
Albuquerque, NM 87107

RE: Memorandum of Understanding for Delegation of Authority for Data Entry into netDMR System

Dear Mr. Lovato,

As you are aware, twelve of the permittees under NPDES Permit No. NMR04A000 (Permit) have entered into a cooperative agreement for the performance of permit-mandated water quality monitoring. Currently, results from the samples taken during monitoring events are shared among the twelve members of the Compliance Monitoring Cooperative (CMC) and must be entered by each entity into the netDMR database individually, creating twelve identical (barring typos or other data entry error) records. This is clearly inefficient, at best.

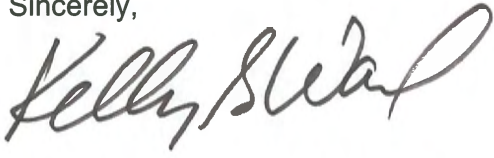
Following discussions between the CMC and the EPA, the EPA has approved a methodology whereby one member of the CMC will enter data in netDMR on behalf of any other CMC-member entity. Each CMC-member entity that wishes to participate will delegate authority to the data entry CMC-member entity or their designed contractor, for this purpose. We appreciate Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) volunteering to be the data entry CMC entity on behalf of the CMC.

Therefore, the Village of Los Ranchos de Albuquerque (Los Ranchos), permit number NMR04A006, hereby delegates authority for data entry and approval of sampling results into netDMR to AMAFCA for the purposes of compliance with Permit requirements. Please sign and return one original of this MOU and provide us notification of the completion of data entry via email for our records.

In the event that AMAFCA becomes unable to perform this function on behalf of Los Ranchos, please notify me a minimum of 60 days prior to the deadline for data entry so that we may arrange to perform this function internally.

If you have any questions or need any clarification regarding this letter, please feel free to contact me at KWard@LosRanchosNM.gov or (505) 344-6582. Thank you again for your willingness to perform this operation on behalf of the membership of the CMC.

Sincerely,



Kelly Ward
Administrator



Acknowledged and Accepted
Jerry Lovato, P.E.
Executive Director, AMAFCA

CC: Tim McDonough, Director, Planning & Zoning Department

attachment



Town of Bernalillo

"The City of Coronado"

Mayor
Jack Torres

Council
Marian A. Jaramillo
Tina Dominguez
Dale R. Prairie
Ronnie A. Sisneros

November 30, 2017

Mr. Jerry Lovato, Executive Engineer
Albuquerque Metropolitan Arroyo Flood Control Authority
2600 Prospect Ave NE
Albuquerque, NM 87107

RE: Memorandum of Understanding for Delegation of Authority for Data Entry into netDMR System

Dear Mr. Lovato,


As you are aware, twelve of the permittees under NPDES Permit No. NMR04A000 (Permit) have entered into a cooperative agreement for the performance of permit-mandated water quality monitoring. Currently, results from the samples taken during monitoring events are shared among the twelve members of the Compliance Monitoring Cooperative (CMC) and must be entered by each entity into the netDMR database individually, creating twelve identical (barring typos or other data entry error) records. This is clearly inefficient, at best.

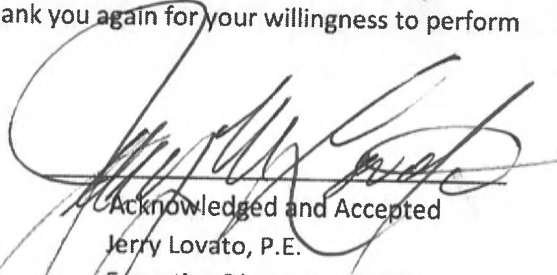
Following discussions between the CMC and the EPA, the EPA has approved a methodology whereby one member of the CMC will enter data in netDMR on behalf of any other CMC-member entity. Each CMC-member entity that wishes to participate will delegate authority to the data entry CMC-member entity or their designed contractor, for this purpose. We appreciate Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) volunteering to be the data entry CMC entity on behalf of the CMC.

Therefore, the Town of Bernalillo, permit number NMR04A003, hereby delegates authority for data entry and approval of sampling results into netDMR to AMAFCA for the purposes of compliance with Permit requirements. Please provide us notification of the completion of data entry via email for our records.

In the event that AMAFCA becomes unable to perform this function on behalf of the Town of Bernalillo, please notify me a minimum of 60 days prior to the deadline for data entry so that we may arrange to perform this function internally.

If you have any questions or need any clarification regarding this letter, please feel free to contact me at aedmondson@townofbernalillo.org or at 505-867-3311. Thank you again for your willingness to perform this operation on behalf of the membership of the CMC.


Requested
Jack Torres,
Mayor, Town of Bernalillo


Acknowledged and Accepted
Jerry Lovato, P.E.
Executive Director, AMAFCA

P.O. Box 638 829 Camino del Pueblo Bernalillo, NM 87004 Phone (505) 771-7124 Fax (505) 867-2380



Southern Sandoval County Arroyo Flood Control Authority

1041 Commercial Drive SE • Rio Rancho, NM 87124
Ph (505) 892-RAIN (7246) • Fax (505) 892-7241

BOARD OF DIRECTORS

John Chaney
Mark Conkling
James F. Fahey Jr.
Steven M. House
Michael Obrey

EXECUTIVE ENGINEER

Charles Thomas, P.E.

August 7, 2017

Mr. Jerry Lovato, Executive Engineer
Albuquerque Metropolitan Arroyo Flood Control Authority
2600 Prospect Ave NE
Albuquerque, NM 87107

RE: Memorandum of Understanding for Delegation of Authority for Data Entry into netDMR System

Dear Mr. Lovato,

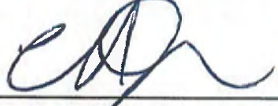
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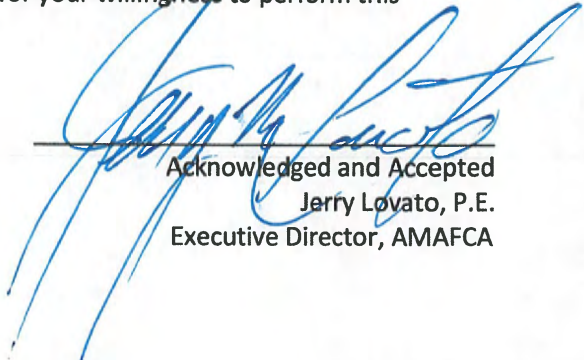
Following discussions between the CMC and the EPA, the EPA has approved a methodology whereby one member of the CMC will enter data in netDMR on behalf of any other CMC-member entity. Each CMC-member entity that wishes to participate will delegate authority to the data entry CMC-member entity or their designed contractor, for this purpose. We appreciate Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) volunteering to be the data entry CMC entity on behalf of the CMC.

Therefore, the Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA), permit number NMR04A001, hereby delegates authority for data entry and approval of sampling results into netDMR to AMAFCA for the purposes of compliance with Permit requirements. Please provide us notification of the completion of data entry via email for our records.

In the event that AMAFCA becomes unable to perform this function on behalf of SSCAFCA, please notify me a minimum of 60 days prior to the deadline for data entry so that we may arrange to perform this function internally.

If you have any questions or need any clarification regarding this letter, please feel free to contact me at cthomas@sscafca.com or at 505-892-7246. Thank you again for your willingness to perform this operation on behalf of the membership of the CMC.


Requested
Charles Thomas, P.E.
Executive Engineer, SSCAFCA


Acknowledged and Accepted
Jerry Lovato, P.E.
Executive Director, AMAFCA



ESCAFCA

Eastern Sandoval County Arroyo
Flood Control Authority

P.O. Box 638
Bernalillo, NM 87004
Tel: 771-7110 ext. 7110
<http://www.escafca.com/>

August 10, 2017

Mr. Jerry Lovato, Executive Engineer
Albuquerque Metropolitan Arroyo Flood Control Authority
2600 Prospect Ave NE
Albuquerque, NM 87107

RE: Memorandum of Understanding for Delegation of Authority for Data Entry into netDMR System

Dear Mr. Lovato,

As you are aware, twelve of the permittees under NPDES Permit No. NMR04A000 (Permit) have entered into a cooperative agreement for the performance of permit-mandated water quality monitoring. Currently, results from the samples taken during monitoring events are shared among the twelve members of the Compliance Monitoring Cooperative (CMC) and must be entered by each entity into the netDMR database individually, creating twelve identical (barring typos or other data entry error) records. This is clearly inefficient, at best.

Following discussions between the CMC and the EPA, the EPA has approved a methodology whereby one member of the CMC will enter data in netDMR on behalf of any other CMC-member entity. Each CMC-member entity that wishes to participate will delegate authority to the data entry CMC-member entity or their designed contractor, for this purpose. We appreciate Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) volunteering to be the data entry CMC entity on behalf of the CMC.

Therefore, the Eastern Sandoval County Arroyo Flood Control Authority (ESCAFCA), permit number NMR04A015, hereby delegates authority for data entry and approval of sampling results into netDMR to AMAFCA for the purposes of compliance with Permit requirements. Please provide us notification of the completion of data entry via email for our records.

In the event that AMAFCA becomes unable to perform this function on behalf of ESCAFCA, please notify me a minimum of 60 days prior to the deadline for data entry so that we may make other arrangements.

If you have any questions or need any clarification regarding this letter, please feel free to contact me at blairylar@hotmail.com or at 505-249-1035. Thank you again for your willingness to perform this operation on behalf of the membership of the CMC.

Requested
Larry A. Blair, P.E.
Executive Engineer, ESCAFCA

Acknowledged and Accepted
Jerry Lovato, P.E.
Executive Director, AMAFCA

Board of Directors:

Sal Reyes, Chairman

Leroy Lovato

Jack Torres

Administator
Danielle Welch
dwelch@escafca.com

Executive Engineer
Larry A. Blair, P.E.
blairylar@hotmail.com



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6

1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202-2733

RECEIVED APR 25 2017

APR 10 2017

CERTIFIED MAIL – RETURN RECEIPT REQUESTED: 7014 0150 0000 2454 3244

Mr. Dave Gatterman, P.E.
Southern Sandoval County
Arroyo Flood Control Authority
1041 Commercial Dr. S.E.
Rio Rancho, NM 87124

Re: Request for Delegation of Entering Data

Mr. Gatterman:

Thank you for your email of February 8, 2017, requesting that the Middle Rio Grande member for entering monitoring events data into NetDMR on behalf of the other members. It is our understanding that Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) will be the member who will be inputting the data. EPA approves CMC's request for the delegation because it is efficient and not duplicative. While we approve the CMC's request for the delegation, EPA would like to emphasize a few items.

EPA's NPDES Permits and TMDLs Branch has pointed out that AMAFCA has certain obligations:

- If AMAFCA agrees to enter monitoring events data on the permittees' (CMC member entities) behalf, this should be memorialized in a Memorandum of Agreement (MOA) or its equivalent. AMAFCA must maintain this obligation as part of their SWMP description and it should also be incorporated into the AMAFCA's SWMP.
- The CMC's SWMPs should also indicate that AMAFCA is responsible for implementing this action.

EPA's Water Enforcement Branch would also like to highlight Part I D.3.b of the Middle Rio Grande MS4 Permit requirements regarding Shared Responsibility and cooperative Programs, and Part IV.A of the MS4 Permit regarding Standard Permit Conditions and Duty to Comply.

- **Part I D.3.b** states that Implementation of the SWMP may be achieved through participation with other permittees, public agencies, or private entities in cooperative efforts to satisfy the requirements of Part I. D in lieu of creating duplicate program elements for each individual permittee, only if:

“(c) The permittee remains responsible for compliance with the permit obligations if the other entity fails to implement the control measure component.”

- **Part IV A** states that the permittee(s) must comply with all conditions of this permit insofar as those conditions are applicable to each permittee, either individually or jointly. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action.

As stated above, please note that each permittee is responsible for meeting its own permit obligations. If you have any questions, please contact Robert Houston, Special Projects Section Chief, at (214) 665-8565.

Sincerely,

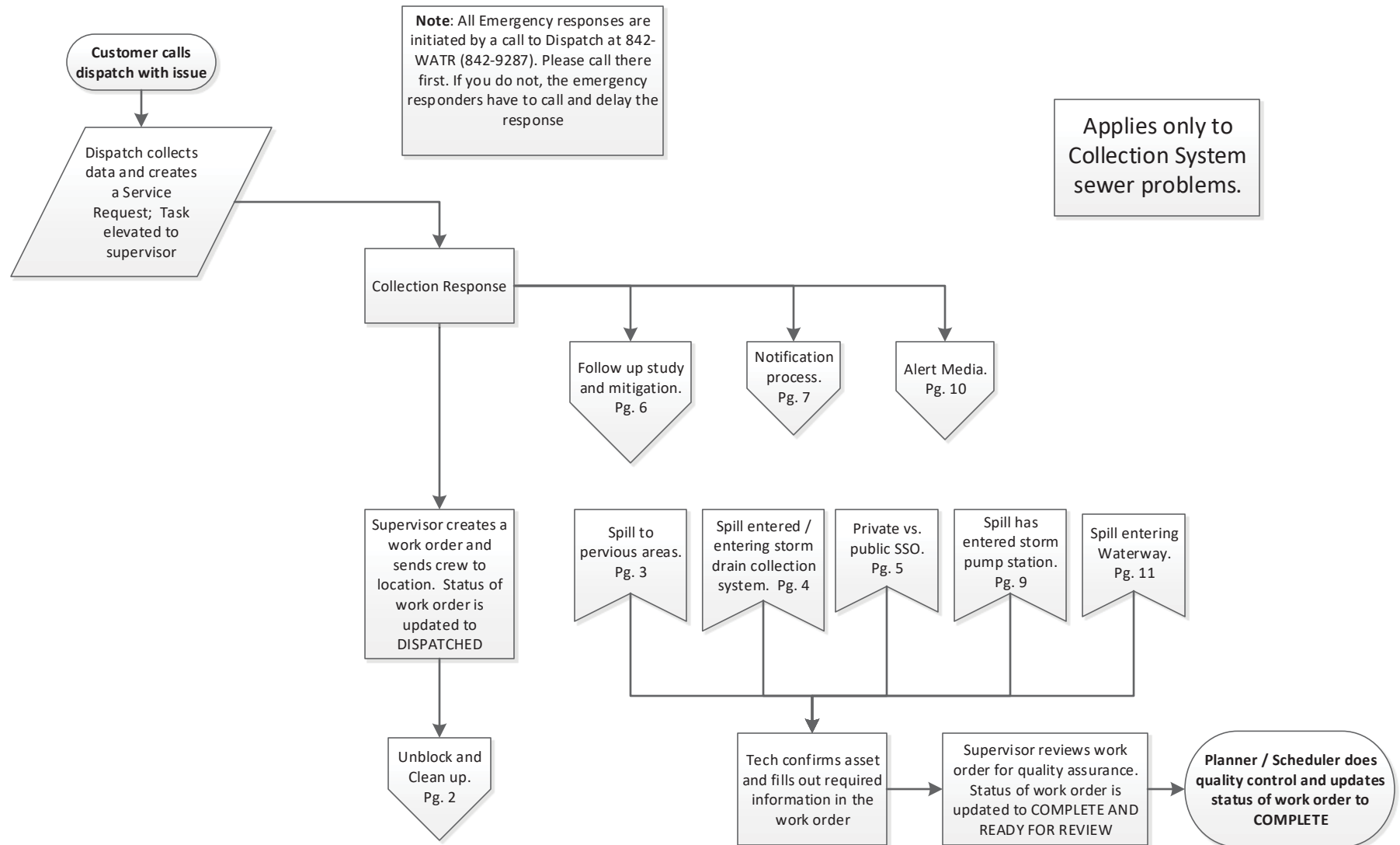
A handwritten signature in dark ink, consisting of a stylized capital 'C' followed by a long, horizontal, slightly wavy line that tapers to the right.

Cheryl T. Seager
Division Director
Compliance Assurance and
Enforcement Division

Overflow Emergency Response Plan

12-1-2019

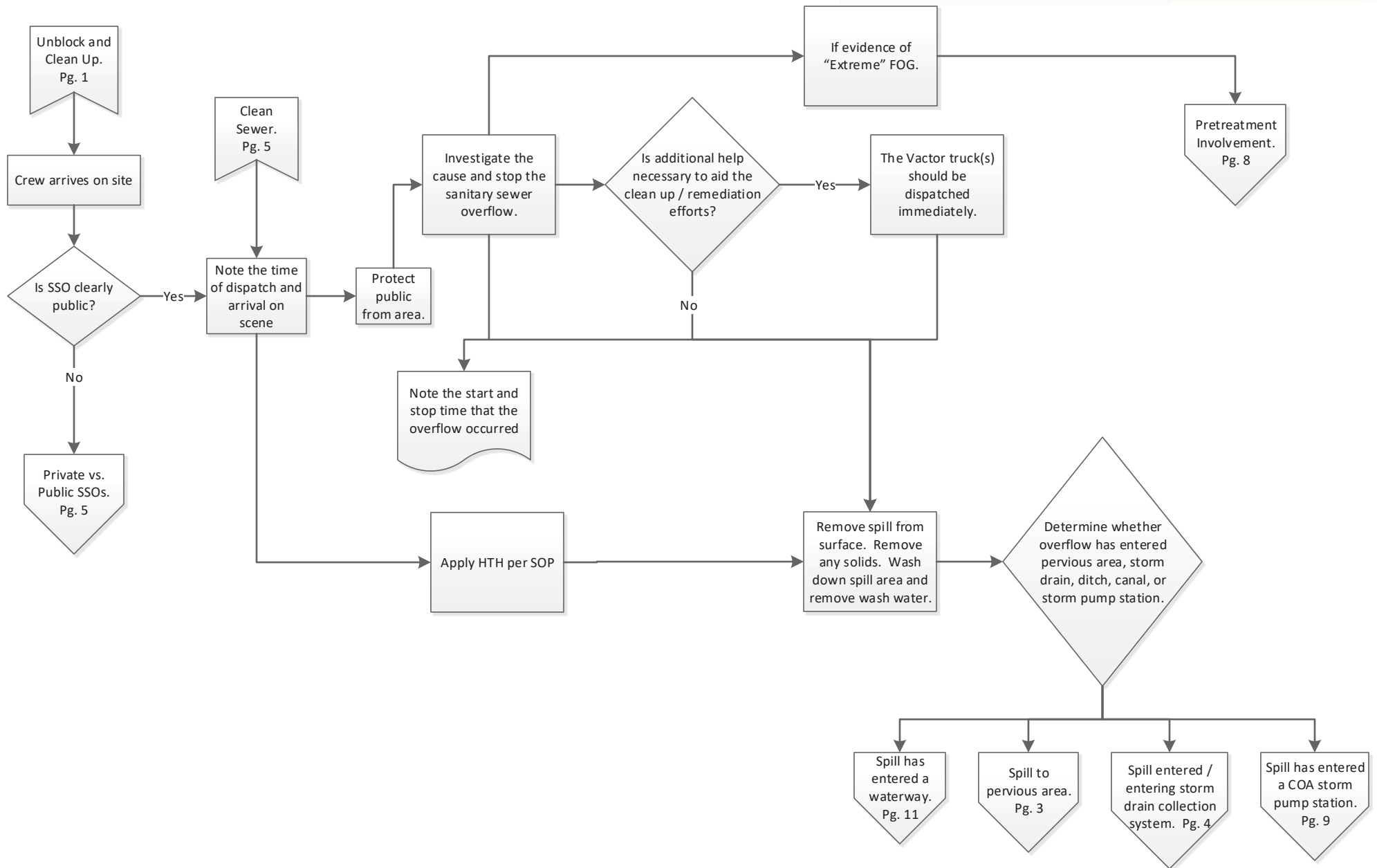
Albuquerque Bernalillo County Water Utility Authority



Overflow Emergency Response Plan

12-1-2019

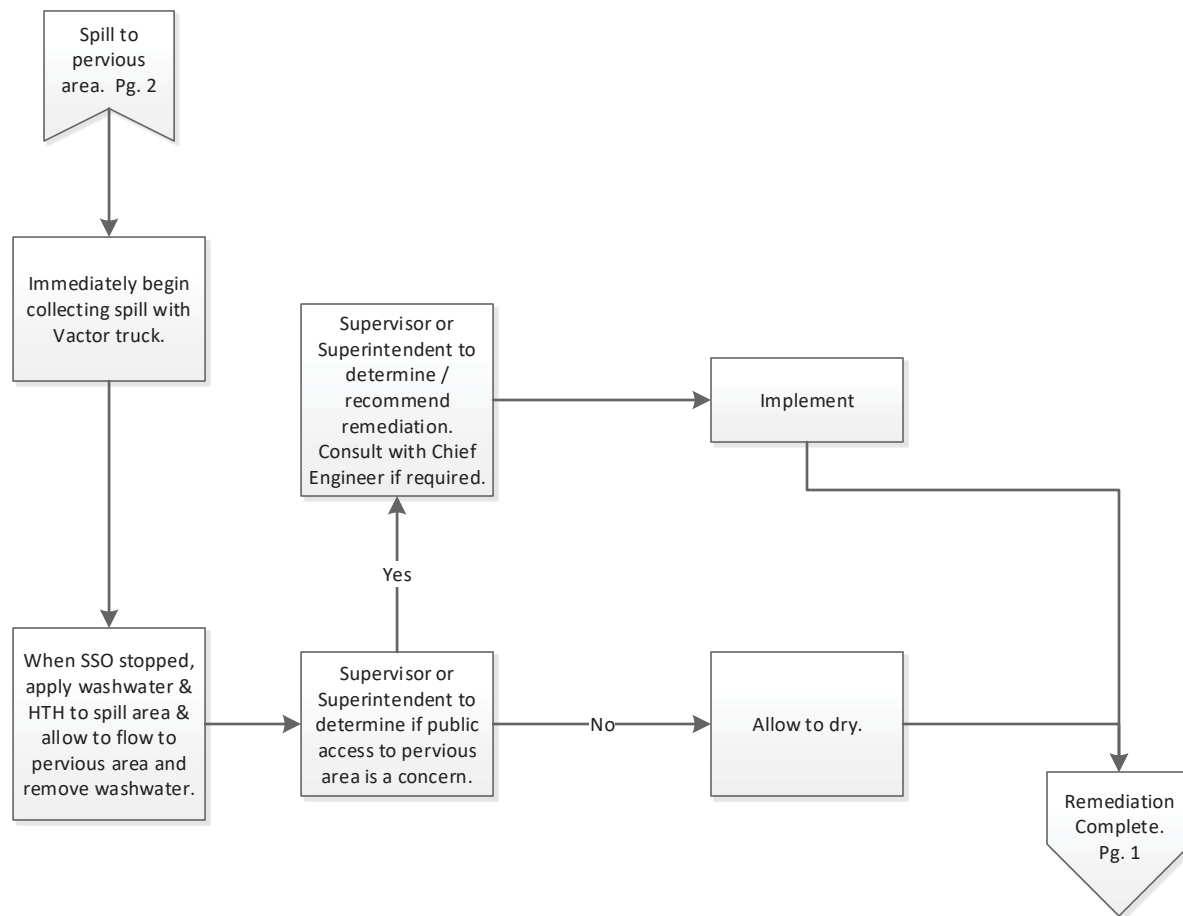
Albuquerque Bernalillo County Water Utility Authority



Overflow Emergency Response Plan

12-1-2019

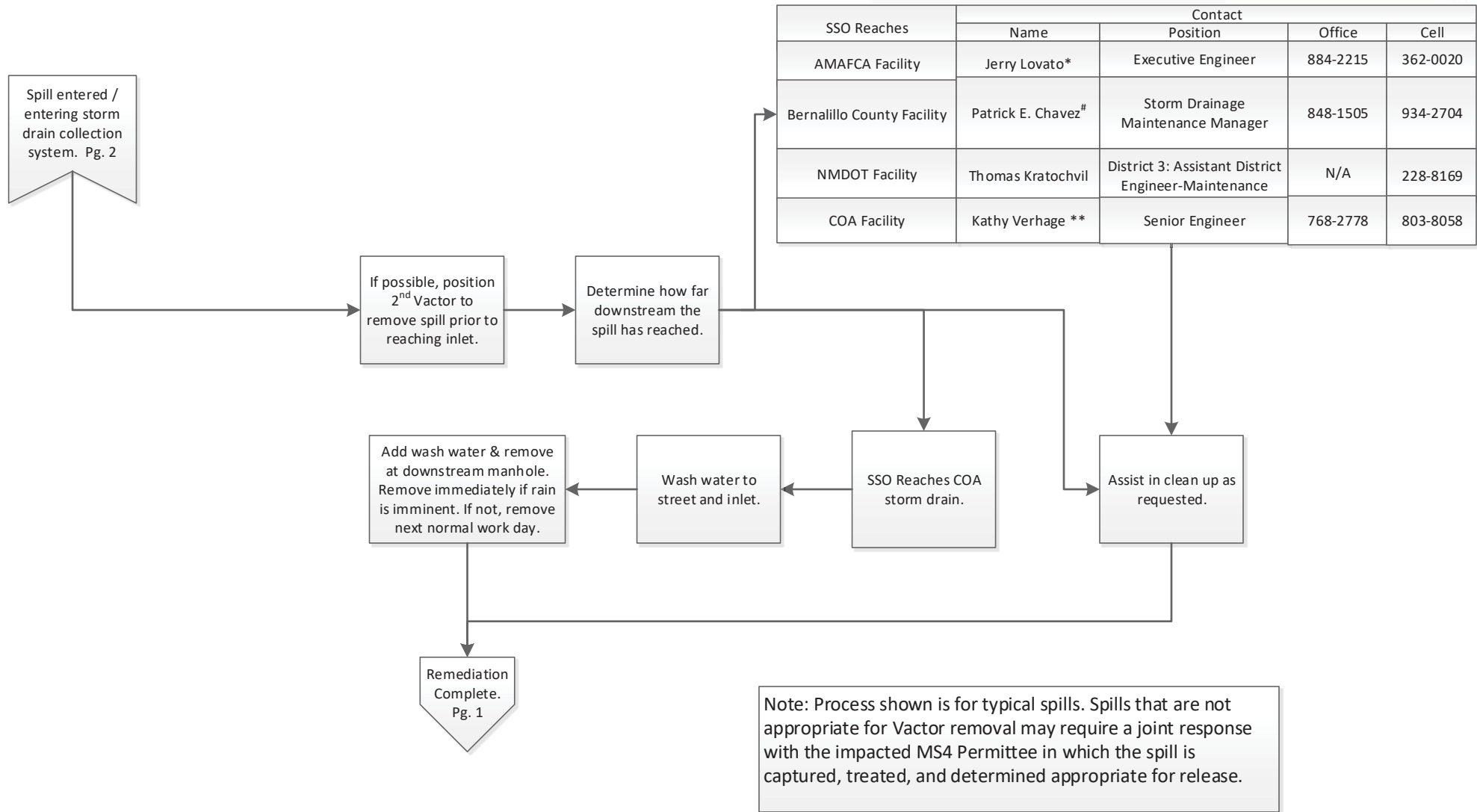
Albuquerque Bernalillo County Water Utility Authority



Overflow Emergency Response Plan

12-1-2019

Albuquerque Bernalillo County Water Utility Authority



*If Jerry Lovato is not immediately available, call:

Nolan Bennett: Field Engineer (505) 301-6941
Sal Hernandez: Superintendent (505) 366-8209

**If Kathy Verhage is not immediately available, call:

David Harrison: Engr. Div. Manager (505) 238-4158
Carl Rinkenberger: O&M Manager (505) 250-4334
Daniel Tapia: O&M Supt (505) 228-6874

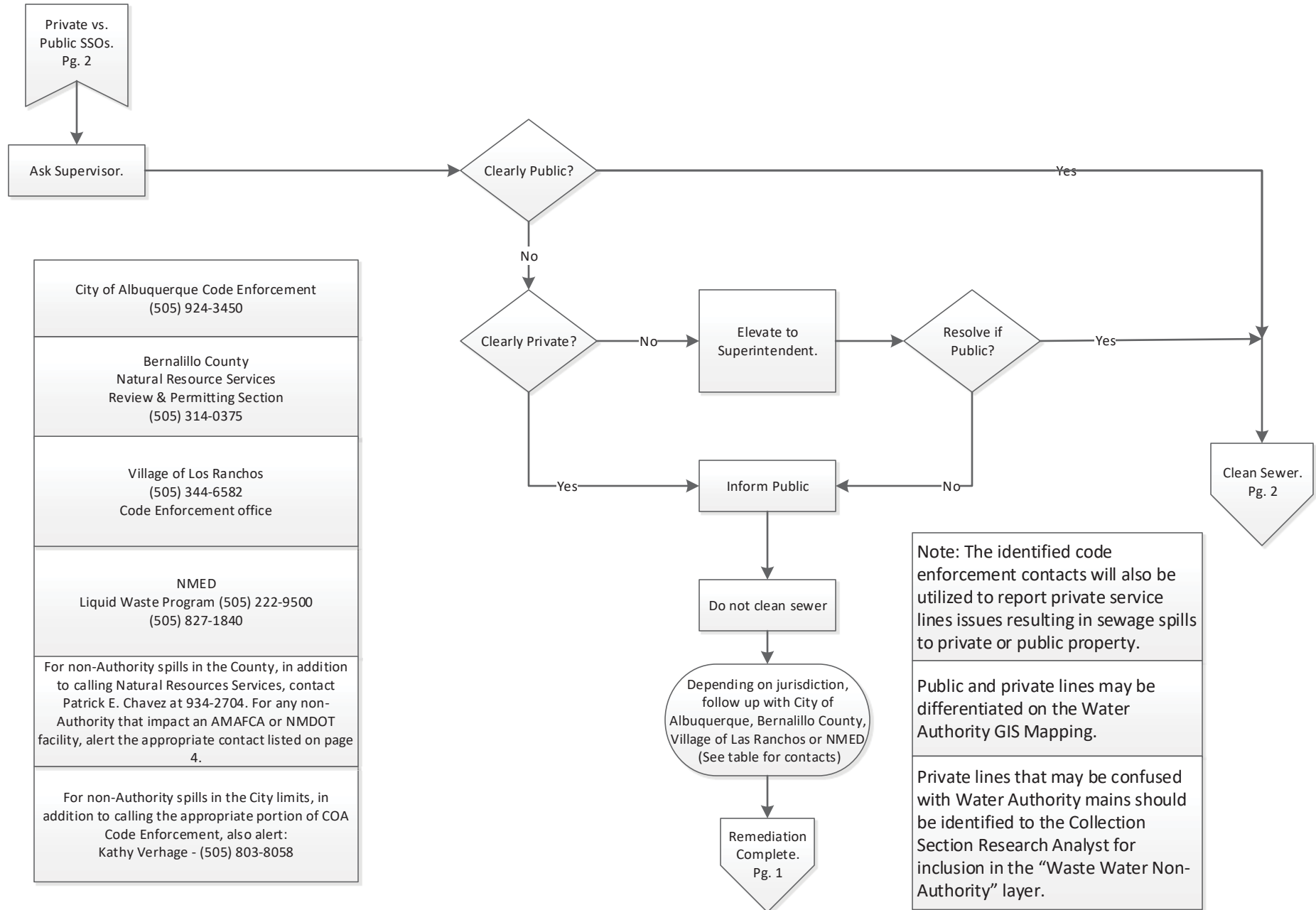
[#]If Patrick E. Chavez is not immediately available, call:

Kali Bronson: Stormwater Program Compliance Manager (505) 401-1779

Overflow Emergency Response Plan

12-1-2019

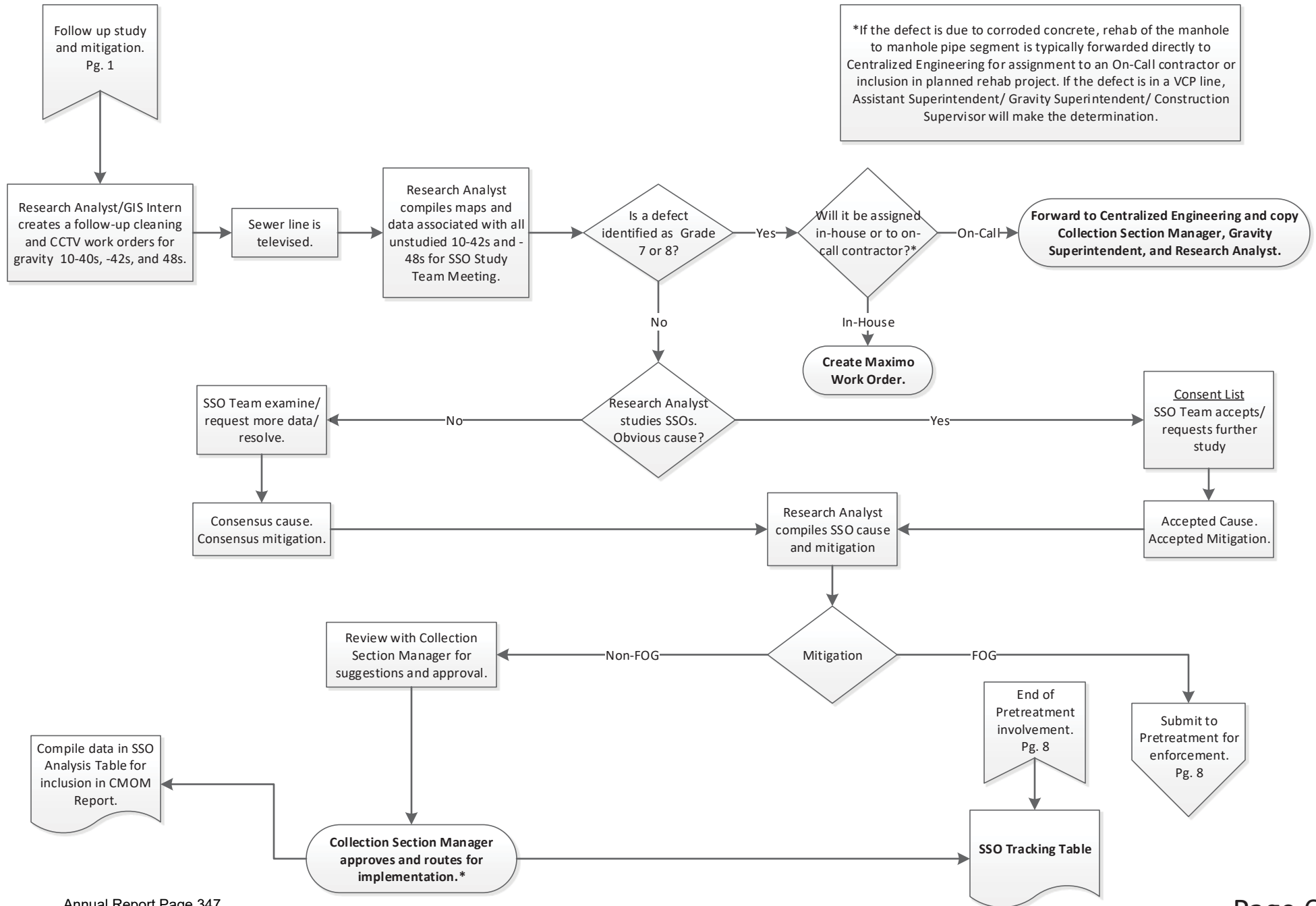
Albuquerque Bernalillo County Water Utility Authority



Overflow Emergency Response Plan

12-1-2019

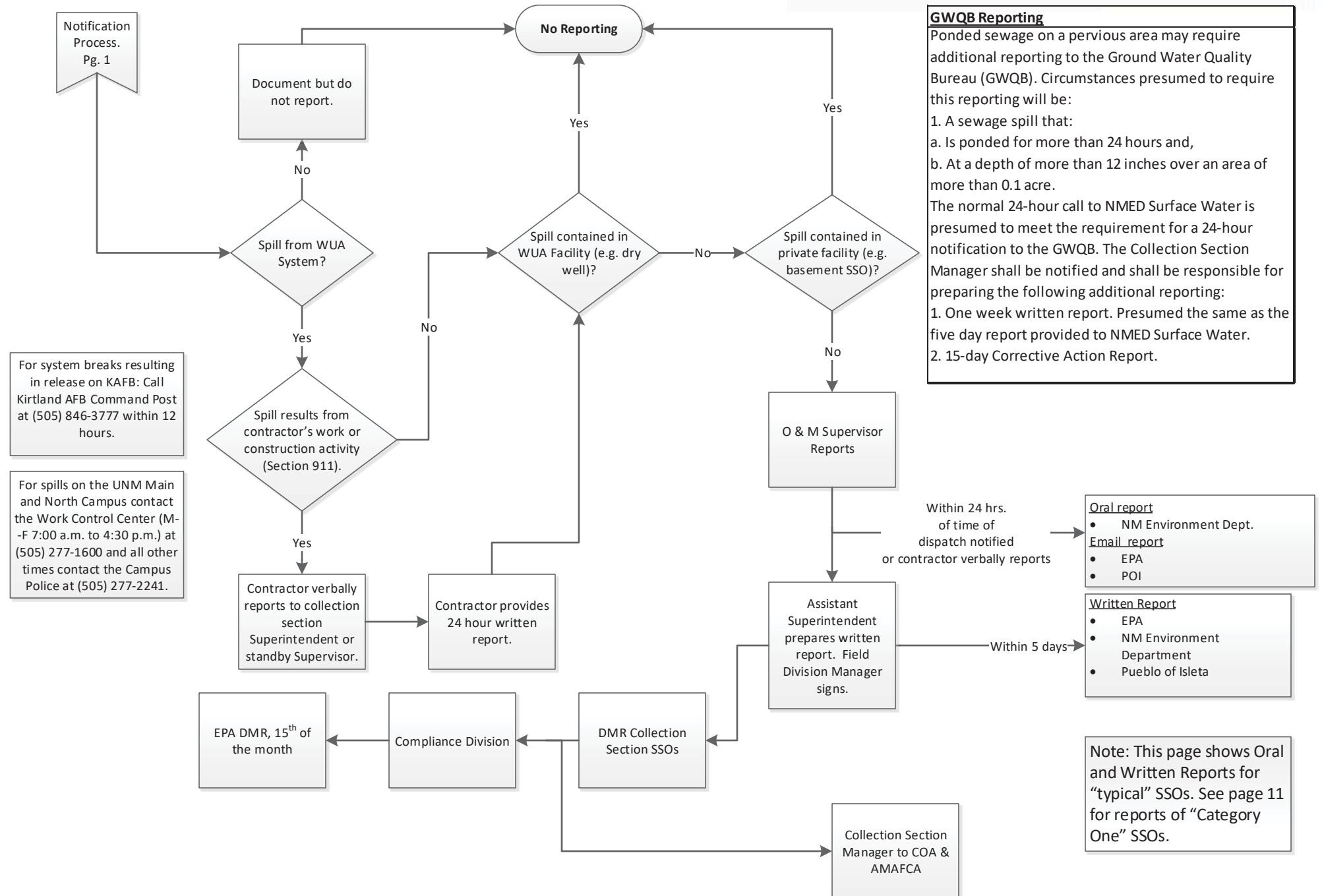
Albuquerque Bernalillo County Water Utility Authority



Overflow Emergency Response Plan

12-1-2019

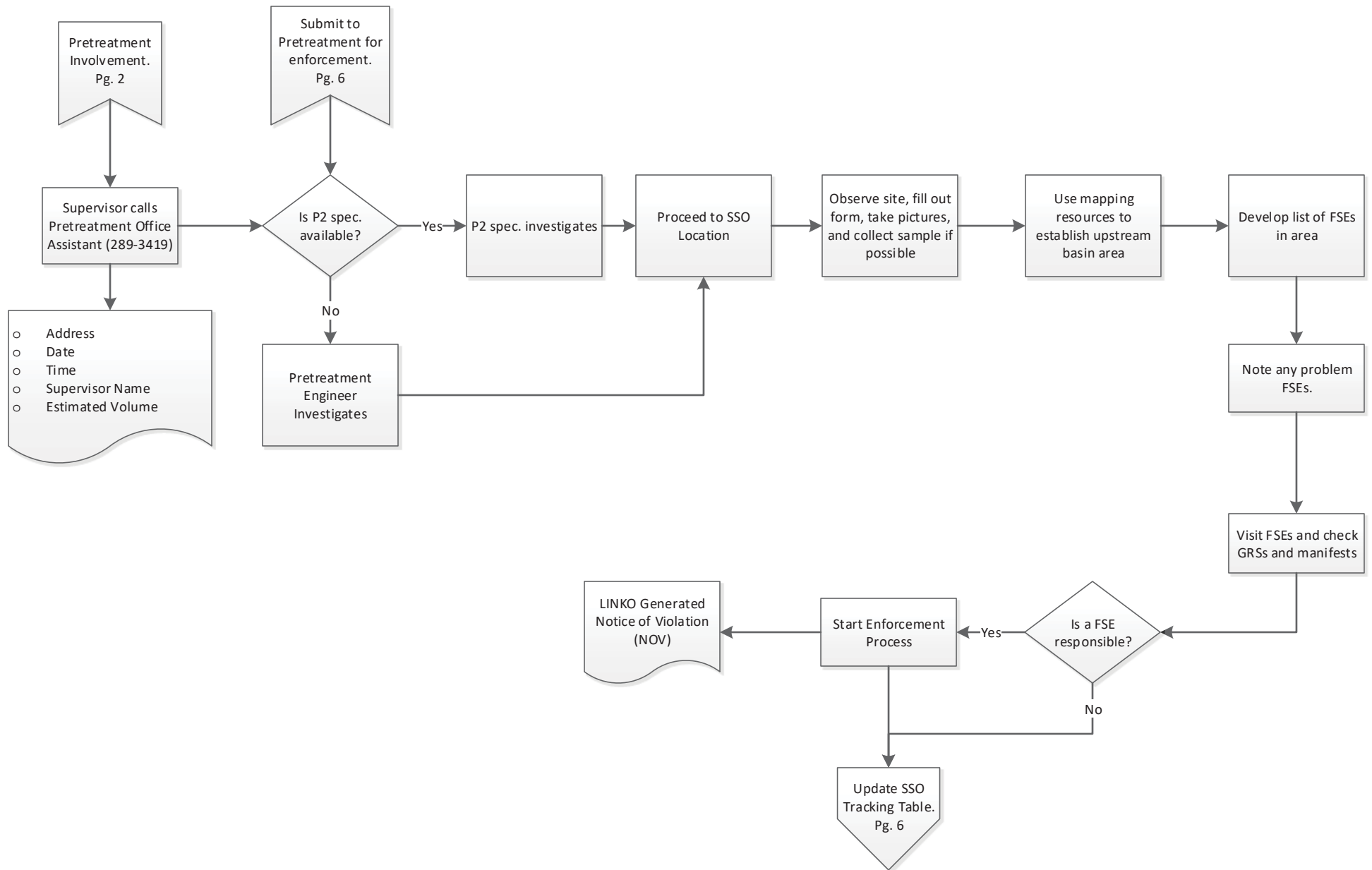
Albuquerque Bernalillo County Water Utility Authority



Overflow Emergency Response Plan

12-1-2019

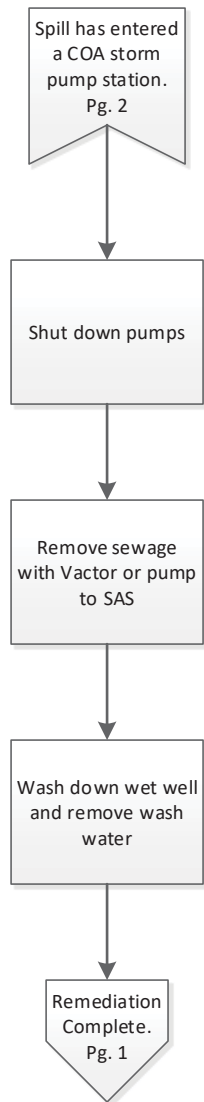
Albuquerque Bernalillo County Water Utility Authority



Overflow Emergency Response Plan

12-1-2019

Albuquerque Bernalillo County Water Utility Authority

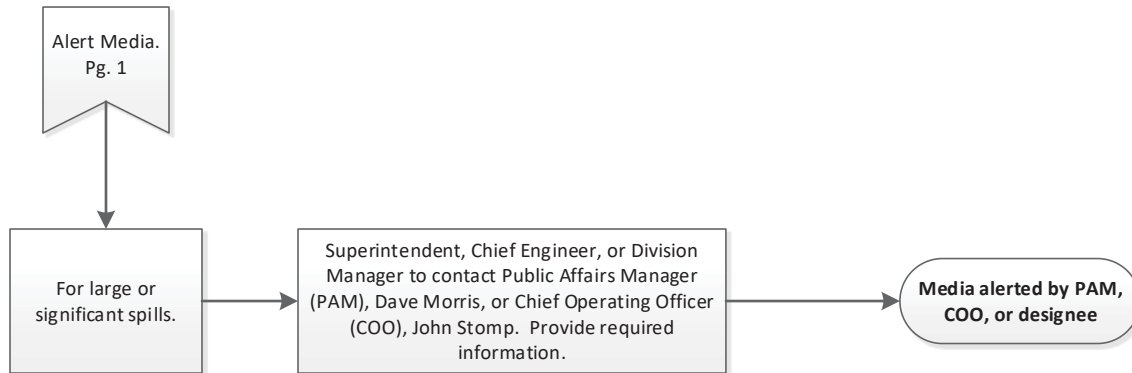


Note: Process shown is for typical spills. Some spills may require a joint response with the City of Albuquerque in which the spill is captured, treated, and determined appropriate for release.

Overflow Emergency Response Plan

12-1-2019

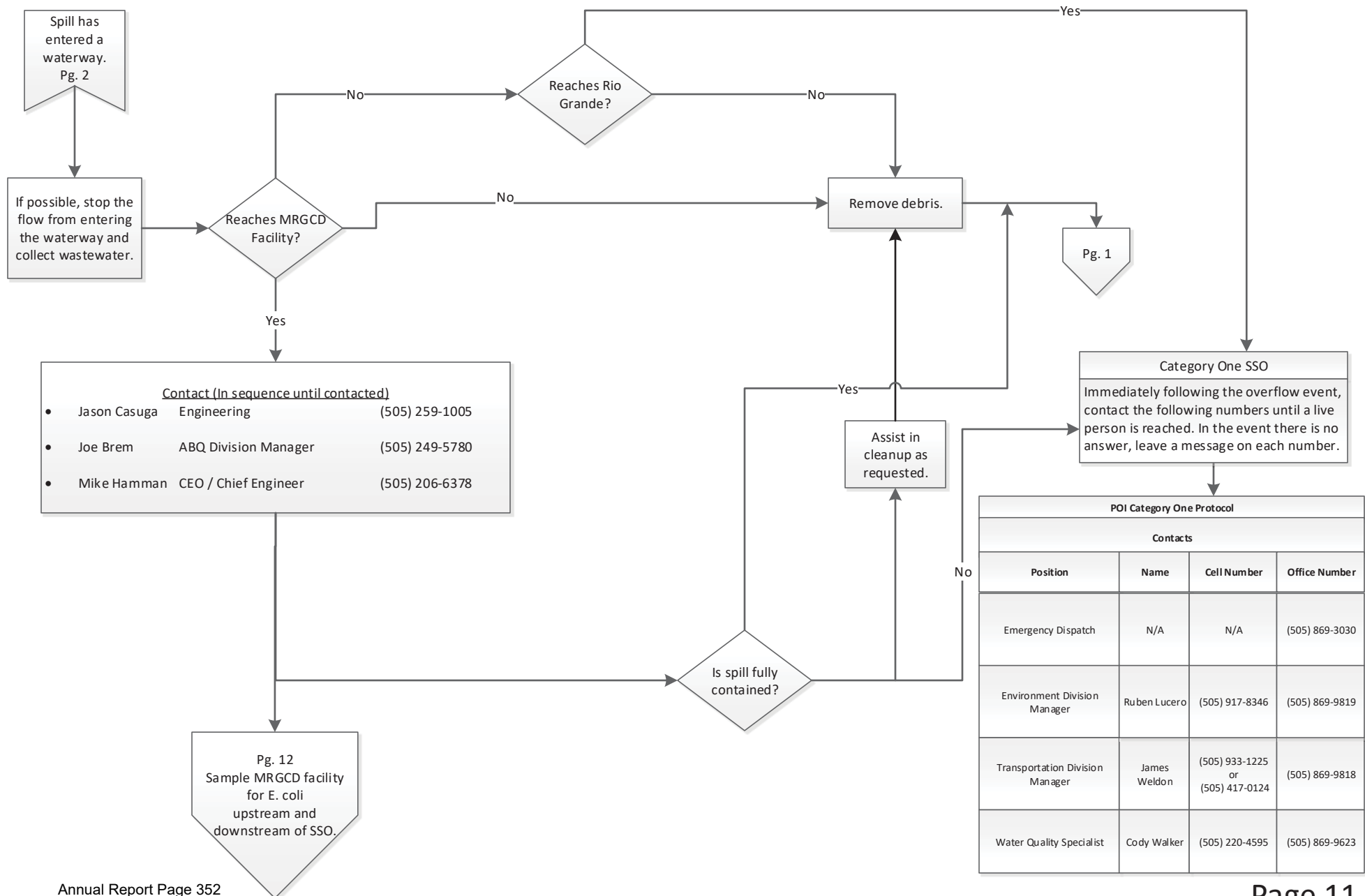
Albuquerque Bernalillo County Water Utility Authority



Overflow Emergency Response Plan

Albuquerque Bernalillo County Water Utility Authority

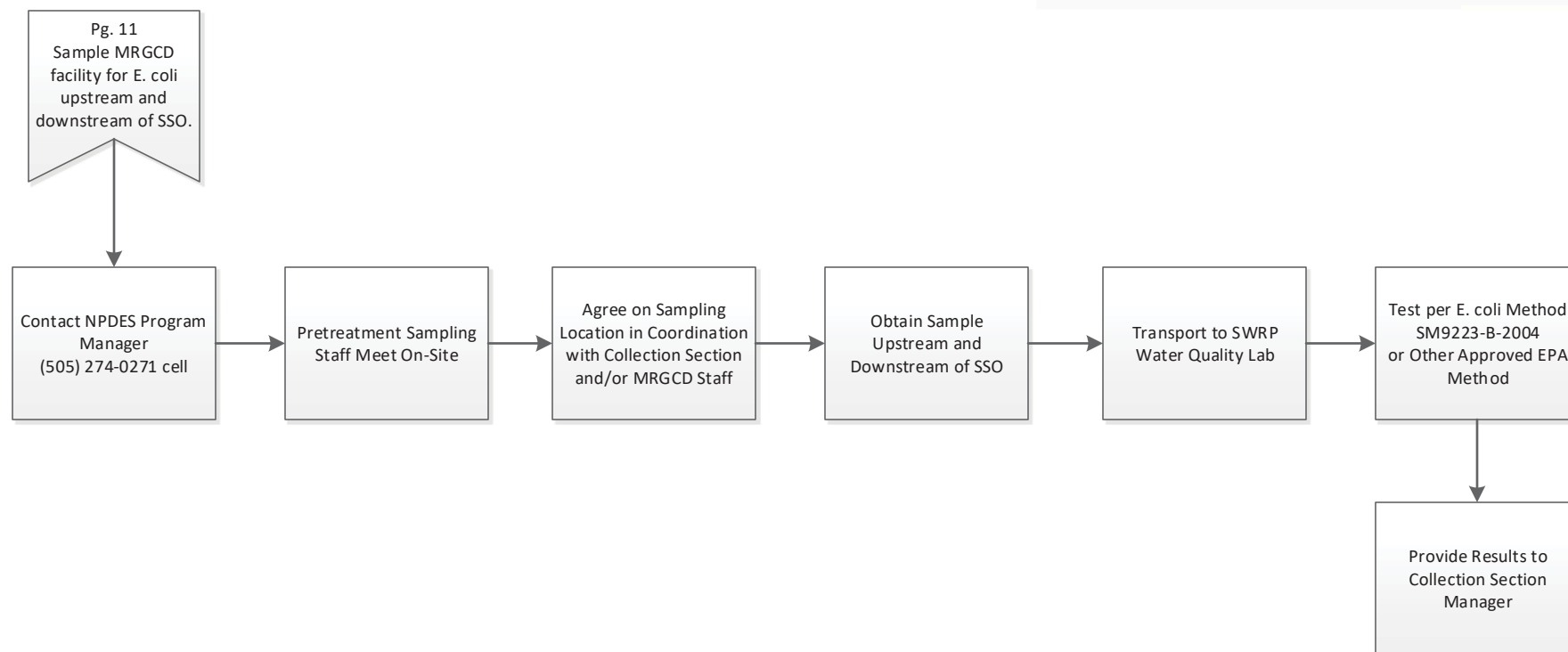
12-1-2019



Overflow Emergency Response Plan

12-1-2019

Albuquerque Bernalillo County Water Utility Authority



2008-18

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT

NO. _____

VENDOR NO. _____

THIS AGREEMENT is made and entered into this 2nd day of June, 2008, by and among the ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY, a political subdivision of the State of New Mexico ("AMAFCA"), and the CITY OF ALBUQUERQUE, a municipal corporation ("CITY") individually referred to as "PARTY" and collectively referred to as the "PARTIES."

RECITALS:

1. **WHEREAS**, AMAFCA, and the CITY have coordinated construction of flood control improvements that connect to flood control facilities within each PARTY's rights of way; and
2. **WHEREAS**, the CITY, and AMAFCA required to maintain the hydraulic performance of said flood control facilities as they are recognized by the Department of Homeland Security Federal Emergency Management Agency as providing 100-year flood protection; and
3. **WHEREAS**, it is in the public interest to minimize traffic impacts to the traveling public by having all traffic control, detours and traffic lane closures under the control of a single agency, during routine maintenance and or emergency work on flood control facilities; and
4. **WHEREAS**, the execution of the hereinafter described services is necessary for AMAFCA, and the CITY to accomplish their mission of providing flood control for the greater Albuquerque area.

NOW THEREFORE, In consideration of the covenants contained herein THE PARTIES AGREE AS FOLLOWS:

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT

Section One – Purpose of Agreement

1.1 Define responsibilities between the PARTIES for the funding of design, construction, and construction management services for an area-wide maintenance and emergency repair contract for surface flood control structures, herein known as the PROJECT.

1.2 Establish lines of communication and contract obligations between the PARTIES for routine maintenance and emergency repair work to be performed on each agency's flood control structures and within each agency's rights of way.

1.3 Establish a fiscal agent to procure and administer a professional engineering services contract to provide design and construction engineering services as required to design, bid, award and administer a construction contract to provide routine maintenance and emergency flood control facility repair work acceptable to the PARTIES.

1.4 Establish a fiscal agent to procure and administer the construction contract for the PROJECT, with the provision that the construction contract will remain open through September 2009, in order to allow for emergency flood control facility repairs during the storm seasons of 2008 and 2009.

1.5 To establish each PARTY's responsibilities in defining maintenance needs within each PARTY's flood control facilities that will be included in the contract documents for the PROJECT. This will include participation in identification and prioritization of required maintenance work within each agency's jurisdiction and will also include the inspection and acceptance of said maintenance work by each of the PARTIES before final payment is made to the PROJECT contractor by the fiscal agent.

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT

1.6 Provide for the delegation of daily inspection of maintenance work within each of the PARTY's rights of way.

1.7 Establish a command structure for emergency flood control work. The PARTIES agree to follow an Incident Command System (ICS) to standardize on-scene incident management.

Section Two – AMAFCA Agrees to:

2.1 Be the fiscal agent for the purposes of this Agreement. All funds from the PARTIES will be held in a separate AMAFCA-held interest-bearing bank account (the "PROJECT ACCOUNT"). Interest accrued will be tracked on behalf of each PARTY, based on the timing and amount of their funding contribution(s) and respective disbursements. Interest accrued will be available for PROJECT costs incurred by each PARTY. At the completion of the PROJECT, AMAFCA will refund any remaining PROJECT funding and /or interest accrued to the respective PARTIES. AMAFCA shall make available to the PARTIES, all records, receipts, and other documentation with respect to all matters concerning this Agreement and shall have the PROJECT ACCOUNT included in its annual audit.

2.2 Procure engineering services as necessary to provide design and construction engineering services through the Request for Proposal process. The engineer will be responsible for gathering infrastructure needs from each of the PARTIES and incorporating that information into the contract documents. The contract documents will include separate bid lots for each PARTY, and each bid lot will include separate task orders for work, identified by type or location of work, with each task order to have a separate listing of bid items and quantity listing, separate notice to proceed date, construction days allowed, liquidated damages, and acceptance of completion of work. The engineer will also assist AMAFCA in calling for bids, conducting the pre-bid tour, opening bids, and making recommendation of award to AMAFCA. This work shall be referred to as the 'PROJECT DESIGN'. The engineer will also provide project management, to include

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT

the preconstruction conference, contract administration, inspection of the construction, geotechnical testing, preparation of monthly pay estimates and change orders, certification of completed work, preparation of record drawings, and other supervision of construction to assure the construction is in conformance with the plans and specifications for the PROJECT. This work shall be referred to as the "PROJECT MANAGEMENT". Each PARTY will be required to have two representatives on the Selection Advisory Committee for this procurement. The Selection Advisory Committee will rank proposals and recommend the top three respondents to the AMAFCA Board of Directors. Upon AMAFCA Board of Directors' acceptance of the Selection Advisory Committee recommendation, AMAFCA will negotiate an agreement with the top ranked engineer. The CITY will provide input on the scope and fees; however, final negotiations and approval of the PROJECT DESIGN and PROJECT MANAGEMENT contract will be at AMAFCA's sole discretion.

2.3 Upon AMAFCA approval of the PROJECT DESIGN contract, AMAFCA will authorize the engineer to begin work and will invoice the CITY for its portion of the PROJECT DESIGN contract costs, including New Mexico gross receipts tax, estimated to be \$20,000.00 each. AMAFCA will provide its portion of the PROJECT DESIGN contract costs, including New Mexico gross receipts tax, also estimated to be \$20,000.00, and deposit its, and the CITY's funding in the PROJECT ACCOUNT. AMAFCA will administer and manage the PROJECT DESIGN contract and will approve and make all required payments to the selected engineer.

2.4 Provide at least one Professional Engineer from staff to participate and assist in the identification and prioritization of AMAFCA maintenance and repair work to be included in the contract documents. This maintenance and repair work is expected to total \$500,000.00 in construction costs. This work will be included within the "AMAFCA Bid Lot" of the contract documents.

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT

2.5 To bid and award the PROJECT through its normal construction procurement method. Upon successful award of the construction contract, AMAFCA will invoice the CITY for its' respective bid lots at actual bid costs, plus ten percent (10%) for PROJECT MANAGEMENT, all to include New Mexico gross receipts tax. AMAFCA will provide its funding for the AMAFCA Bid Lot actual bid costs, plus ten percent (10%) for PROJECT MANAGEMENT, all to include New Mexico gross receipts tax and deposit its and the CITY's funding in the PROJECT ACCOUNT.

2.6 AMAFCA will direct the PROJECT contractor to complete work through a task order process. If an item of work needed to complete a task order is not covered in the contract documents, or if additional task orders are identified and funded during the course of the PROJECT, AMAFCA will initiate a change order to the PROJECT contract by requesting a proposal from the contractor. Should this work require additional engineering design services, AMAFCA will negotiate with the engineer and approve additional engineering design services, with the understanding that the requesting PARTY will concur with the scope and fees for, and fund such additional engineering design services. The PARTY with a task order that requires a change order will approve the change order before the change order is finalized by AMAFCA and sent to the contractor. Upon approval of the change order by AMAFCA, the requesting PARTY and the contractor, AMAFCA will direct the contractor to proceed with the change order and will invoice the requesting PARTY the amount of the additional engineering design services, if any, plus the amount of the change order, plus ten percent (10%) for PROJECT MANAGEMENT, all to include New Mexico gross receipts tax

2.7 Process and pay monthly applications for work completed by the PROJECT contractor. Final payment for each task order will be made by AMAFCA only after the PARTY responsible for maintenance of the facility accepts the work.

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT

2.8 Work with the CITY to develop Emergency Task Orders as may be needed. Emergency Task Orders will be developed by each PARTY. Should this work require additional engineering design services, AMAFCA will negotiate with the engineer and approve additional engineering design services, with the understanding that the requesting PARTY will concur with the scope and fees for, and fund such additional engineering design services. If an item of work needed to complete an Emergency Task Order is not covered in the contract documents, AMAFCA will request a new unit price proposal from the PROJECT contractor. The PARTY requesting an Emergency Task Order will approve the change order before the Emergency Task Order change order is finalized by AMAFCA and sent to the contractor. Upon approval of the Emergency Task Order change order by AMAFCA, the requesting PARTY and the contractor, AMAFCA will issue notice to proceed on the Emergency Task Order change order to the contractor and will invoice the requesting PARTY the amount of the additional engineering design services, if any, plus the amount of the resulting change order to the PROJECT contract, plus ten percent (10%) for PROJECT MANAGEMENT, all to include New Mexico gross receipts tax.

2.9 Hold a preparatory meeting with the contractor and the respective flood control facility owner before a notice to proceed on each task order is given. The purpose of the preparatory meeting is to identify the scope of work associated with the task order, care and diversion of water, time constraints, any special conditions and acceptance criteria for final acceptance of the work by the relevant PARTY.

2.10 Implement all terms and conditions of the PROJECT contract.

2.11 Provide copies of all geotechnical testing reports and daily inspection reports as requested by the PARTIES.

**AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT**

2.12 Halt work to allow remedial measures to be taken should the work be out of compliance with the plans and specifications.

2.13 Fund any AMAFCA-authorized Emergency Task Order(s) on AMAFCA facilities, to include any additional engineering design services, change order amount, plus ten percent (10%) for PROJECT MANAGEMENT, all to include New Mexico gross receipts tax.

2.16 Provide, thru an auxiliary contract, or change order to the PROJECT construction contract, any and all traffic control needed during an Emergency Task Order executed for an AMAFCA flood control facility.

2.17 Provide daily inspection of maintenance work performed on AMAFCA facilities thru the PROJECT MANAGEMENT contract.

2.18 Continue to own, operate and maintain any AMAFCA flood control facility maintained, modified or repaired via this Agreement.

Section Three – CITY Agrees to:

3.1 Designate two Professional Engineers from CITY staff to participate in the Selection Advisory committee for the PROJECT DESIGN and PROJECT MANAGEMENT.

3.2 Fund its portion of the PROJECT DESIGN costs, including New Mexico gross receipts tax, estimated to be \$20,000.00. AMAFCA may invoice the CITY for this amount anytime after AMAFCA approval of the PROJECT DESIGN contract. The CITY will make payment within 45 days of receipt of invoice from AMAFCA.

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT

3.3 Provide at least one Professional Engineer from CITY staff to participate and assist in the identification and prioritization of CITY maintenance and repair work to be included in the contract documents. This maintenance and repair work is expected to total approximately \$250,000.00 in construction costs. This work will be included within the "CITY Bid Lot" of the contract documents.

3.4 Fund the CITY Bid Lot portion of the PROJECT at actual bid cost, plus ten percent (10%) for PROJECT MANAGEMENT, all to include New Mexico gross receipts tax. The CITY will make payment within 45 days of receipt of invoice from AMAFCA. Invoice may be sent by AMAFCA to CITY any time after successful award of the PROJECT construction contract.

3.5 Review, approve and fund any change order(s) necessary for completion of any task order within the CITY Bid Lot, or for any additional task orders identified and funded by the CITY during the course of the PROJECT. Upon approval of the change order by AMAFCA, the CITY and the contractor, the CITY will pay AMAFCA the amount of the additional engineering design services, if any, plus the amount of the change order, plus ten percent (10%) for PROJECT MANAGEMENT, all to include New Mexico gross receipts tax. The CITY will make payment within 45 days of receipt of invoice from AMAFCA.

3.6 Develop, review, approve and fund any Emergency Task Order(s) and resulting change order(s) to the PROJECT contract for any emergency repair work deemed necessary by the CITY during the term of the PROJECT construction contract. Upon approval of the Emergency Task Order change order(s) by AMAFCA, the CITY and the contractor, the CITY will pay AMAFCA the amount of the additional engineering design services, if any, plus the amount of the change order, plus ten percent (10%) for PROJECT MANAGEMENT, all to include New Mexico gross receipts tax. The CITY will make payment within 45 days of receipt of invoice from AMAFCA.

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT

3.7 Provide, thru an auxiliary contract or change order to the PROJECT construction contract, any and all traffic control needed during an Emergency Task Order executed for a CITY flood control facility.

3.8 Provide daily inspection of maintenance work performed on CITY facilities through the PROJECT MANAGEMENT contract.

3.9 Participate in the preparatory meeting with the contractor as the facility owner before a notice to proceed on each task order is given. The CITY will attend the final inspection of the work and provide acceptance of maintenance work performed to AMAFCA.

3.10 Continue to own, operate and maintain any CITY flood control facility maintained, modified or repaired via this Agreement.

Section Four –The Parties Agree:

4.1 To review and, if appropriate, jointly approve the construction documents prior to bidding of the PROJECT. The PARTIES agree that the framework and base specifications for the construction documents will be the New Mexico Department of Transportation Specifications for Bridge and Highway Construction, as modified by the PARTIES with supplemental specifications.

4.2 To cooperate with the resolution of any claim, and each designate a Claims Resolution Officer. The Claims Resolution Officer shall have authority to settle PROJECT construction contract claims up to a minimum of \$20,000.00. Each PARTY's Claims Resolution Officer shall have the authority and responsibility to investigate, negotiate and resolve any and all claims that

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT

may result from construction of that PARTY'S Bid Lot and/or Emergency Task Order(s), up to the Claims Resolution Officer's claim settlement limit. When such claims are settled, the Claims Resolution Officer shall notify AMAFCA who will then execute a change order to the PROJECT construction contract to effect the terms of the claims settlement. Upon execution of the change order, AMAFCA will invoice the responsible PARTY for the claim settlement amount, if any, and AMAFCA will then make payment of the claim as part of the next normal monthly pay estimate due to the PROJECT construction contractor. The responsible PARTY will make payment to AMAFCA within 45 days of receipt of invoice from AMAFCA. Should the Claims Resolution Officer and the PROJECT construction contractor not agree on resolution of such claim, or if the claim is greater than the Claims Resolution Officer's claim settlement limit, the PROJECT construction contract shall mandate arbitration under the current Construction Industry Arbitration Rules of the American Arbitration Association, provided that the AMAFCA Board of Directors reserves its rights to consider or reconsider any such claim regarding the AMAFCA Bid Lot and/or an AMAFCA Emergency Task Order and make resolution thereof. Nothing herein shall preclude the PARTIES' ability to mediate any claim. In the event of any claim, the PARTY whose Task Order(s) has generated such claim shall be responsible for all costs, and any settlement or judgment amount arising from the claim or resolution of the claim, including attorney's fees and costs, and shall take all actions necessary to resolve the claim under the current rules of the American Arbitration Association. In the event the Arbitrator determines claim settlement payment is due to the PROJECT construction contractor, the PARTY shall notify AMAFCA who will then execute a change order to the PROJECT construction contract to effect the terms of the claims settlement. Upon execution of the change order, AMAFCA will invoice the responsible PARTY for the claim settlement amount, if any, and AMAFCA will then make payment of the claim as part of the next normal monthly pay estimate due to the PROJECT construction contractor. The responsible PARTY will make payment to AMAFCA within 45 days of receipt of invoice from AMAFCA.

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT

4.3 To establish a command structure for emergency work. The PARTIES agree to follow an Incident Command System (ICS) to standardize on-scene incident management. Each party will identify an Incident Commander that will be responsible to direct emergency operations for each agency's flood control facilities. The Incident Commander will be the lead in developing Emergency Task Orders and will have the authority to direct AMAFCA to deploy the PROJECT construction contractor as needed. The PARTIES and each of their respective Incident Commanders will attend a class, "Introduction to the Incident Command System, I-100", to be set up by AMAFCA within two months of the approval of this agreement.

4.4 That this AGREEMENT is not intended by any of the provisions of any part of the AGREEMENT to create in the public, or any member thereof, a third party beneficiary or to authorize anyone not a party to the AGREEMENT to maintain a suit for wrongful death, bodily and/or personal injury to person, damage to property, and/or any other claim(s) whatsoever pursuant to the provisions of this AGREEMENT.

4.5 That by entering into this AGREEMENT, the PARTIES shall not be responsible for liability incurred as a result of the other PARTIES' acts or omissions in connection with this AGREEMENT. Any liability incurred in connection with this AGREEMENT is subject to the immunities and limitations of the New Mexico Tort Claims Act, NMSA 1978, Sections 41-4-1, et seq., (as amended). This paragraph is intended only to define the liabilities between the PARTIES hereto and it is not intended to modify, in any way, the PARTIES' liabilities as governed by common law or the New Mexico Tort Claims Act. AMAFCA and their "public employees" as defined in the New Mexico Tort Claims Act, and the CITY and its "public employees" as defined in the New Mexico Tort Claims Act, do not waive sovereign immunity, do not waive any defense and/or do not waive any limitation of liability pursuant to law. No provision in this AGREEMENT modifies and/or waives any provision of the New Mexico Tort Claims Act.

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT

4.6 That this AGREEMENT incorporates all the agreements, covenants, and understandings between the PARTIES hereto concerning the subject matter hereof. No prior agreements or understandings, verbal or otherwise, of the PARTIES or their agents shall be valid or enforceable unless embodied in this AGREEMENT. Performance of all duties and obligations herein shall conform with and do not contravene any state, local, or Federal statutes, regulations, rules, or ordinances. All notices with respect to this AGREEMENT shall be in writing and shall be delivered personally, sent via confirmed fax, or sent postage prepaid by United States Certified Mail, return receipt requested, to the addresses set forth below or such other addresses as hereafter specified in writing by one Party to the other:

Albuquerque Metropolitan Arroyo
Flood Control Authority
2600 Prospect Ave. NE
Albuquerque, New Mexico 87107
Attn: Executive Engineer

City of Albuquerque
Department of Municipal Development
P.O. Box 1293
Albuquerque, NM 87103
Attn: Director, Department of Municipal Development

4.7 That this AGREEMENT shall not take effect until executed by all of the PARTIES hereto.

4.8 That in the event that any portion of this AGREEMENT is determined to be void, unconstitutional or otherwise unenforceable, the remainder of this AGREEMENT shall remain in full force and effect.


4.9 Disputes under this Agreement will be referred to binding arbitration under the provisions of the New Mexico Uniform Arbitration Act.

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT

4.10 This AGREEMENT shall not be altered, modified, or amended except by an instrument in writing and executed by the PARTIES hereto.

IN WITNESS WHEREOF, the parties have set their hands and seals this day and year set forth below.

ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY

By: 
Danny Hernandez, Chairman
AMAFCA Board of Directors

Date: 5/22/08

ATTEST:

By: 
Tim Eichenberg, Secretary/Treasurer
AMAFCA Board of Directors

Date: 5/22/08

APPROVED AS TO FORM BY AMAFCA'S ATTORNEY

By: 
Marcus Rael
Legal Counsel

Date: 05/21/08

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT

ACKNOWLEDGMENT

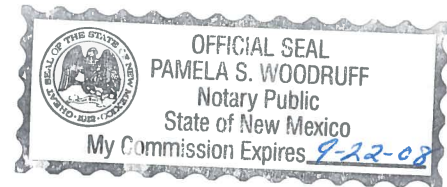
STATE OF NEW MEXICO)
)ss.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on May 22, 2008, by
Danny Hernandez, Chairman of the Board of Directors, on behalf of the Albuquerque
Metropolitan Arroyo Flood Control Authority, a political subdivision of the State of New
Mexico.

Pamela S. Woodruff
Notary Public


My Commission Expires:

9-22-08



AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT

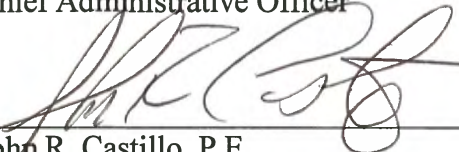
City of Albuquerque



Bruce J. Perlman, Ph.D.,
Chief Administrative Officer

5/30/08

Date




John R. Castillo, P.E.,
Director, Department of Municipal Development

5/22/08

Date

Reviewed as to Form:

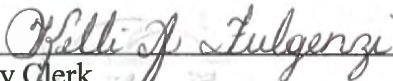


City Attorney *GPS*

5-23-08

Date

Attest:



City Clerk

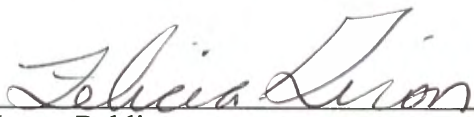
6/2/08

Date

ACKNOWLEDGMENT

STATE OF NEW MEXICO)
)ss.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on May 30, 2008, by Bruce J. Perlman, Ph.D., Chief Administrative Officer for the City of Albuquerque, a New Mexico municipal corporation.



Notary Public

My Commission Expires: 1-27-2010

FIRST AMENDMENT TO
"AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR AGENCY
AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT"

THIS FIRST AMENDMENT to Agreement for Design, Construction and Construction Engineering Services for Agency and Area-Wide Flood Control Maintenance Contract is made and entered into this 19th day of October, 2009, by and between Albuquerque Metropolitan Arroyo Flood Control Authority, a political subdivision of the State of New Mexico (hereinafter referred to as AMAFCA), and the City of Albuquerque, a municipal corporation (hereinafter referred to as CITY).

RECITALS:

1. **WHEREAS**, on June 2, 2008, AMAFCA and the CITY entered into the agreement titled "Agreement for Design, Construction and Construction Engineering Services for Agency and Area-Wide Flood Control Maintenance Contract" ("ORIGINAL AGREEMENT") to define responsibilities for the funding, design, construction, construction management of the PROJECT and to establish a fiscal agent to procure and administer professional engineering services contract(s) and to procure and administer the contraction contract(s) for the PROJECT; and
2. **WHEREAS**, the ORIGINAL AGREEMENT provided for a construction contract that would remain open through September 2009, in order to allow for emergency flood control facility repairs during the storm seasons of 2008 and 2009; and.
3. **WHEREAS**, the CITY and AMAFCA have funding programmed for FY-2010 and FY-2011 for similar PROJECT type work, and desire to follow the same course of action and respective participatory roles as were described in the ORIGINAL AGREEMENT in order to procure professional engineering services and a follow-on construction contract in order to allow for planned and emergency flood control facility repairs prior to and during the storm seasons of 2010 and 2011.

FIRST AMENDMENT TO
"AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR AGENCY
AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT"

NOW THEREFORE, AMAFCA and the CITY hereby agree to amend the ORIGINAL AGREEMENT as follows:

In Section One of the ORIGINAL AGREEMENT, Purpose of Agreement:

Delete paragraph 1.1 in its entirety and replace with the following:

1.1 Define responsibilities between the PARTIES for the funding of design, construction, and construction management services for the second phase of an area-wide maintenance and emergency repair contract for surface flood control structures, herein known as the PROJECT.

Delete paragraph 1.3 in its entirety and replace with the following:

1.3 Continue to use AMAFCA as the fiscal agent to procure and administer a professional engineering services contract to provide design and construction engineering services as required to design, bid, award and administer a construction contract to provide routine maintenance and emergency flood control facility repair work acceptable to the PARTIES.

Delete paragraph 1.4 in its entirety and replace with the following:

1.4 Continue to use AMAFCA as the fiscal agent to procure and administer the construction contract for the PROJECT, with the provision that the construction contract will remain open through November 2011, in order to allow for planned and emergency flood control facility repairs prior to and during the storm seasons of 2010 and 2011.

In Section Three of the ORIGINAL AGREEMENT, City Agrees to:

Delete paragraph 3.3 in its entirety and replace with the following:

FIRST AMENDMENT TO
"AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR AGENCY
AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT"

3.3 Provide at least one Professional Engineer from CITY staff to participate and assist in the identification and prioritization of CITY maintenance and repair work to be included in the contract documents. This maintenance and repair work is expected to total approximately \$165,000 in construction costs. This work will be included within the "CITY Bid Lot" of the contract documents. This maintenance and repair work may be increased in scope and quantity depending on the CITY's availability of funding.

In Section Four of the ORIGINAL AGREEMENT, The Parties Agree:

Add the following Paragraph 4.11

4.11 That any CITY or AMAFCA funding remaining in the PROJECT ACCOUNT shall remain in the PROJECT ACCOUNT and be made available for the PROJECT. The PARTIES further recognize that the PROJECT ACCOUNT has been invested in the State of New Mexico Local Government Investment Pool ("LGIP") and effective March 4, 2009, based on balances in the PROJECT ACCOUNT on September 15, 2009, a portion of such remaining funds has been set aside in the LGIP Reserve Contingency Fund, and currently is not available for withdrawal. As of June 30, 2009, the CITY's total balance in the PROJECT ACCOUNT was \$7,660.17, of which \$2,717.47 is set aside in the LGIP Reserve Contingency Fund. As of June 30, 2009, AMAFCA's total balance in the PROJECT ACCOUNT was \$64,046.05, of which \$13,757.30 is set aside in the LGIP Reserve Contingency Fund. As further distributions are made by LGIP, the amount reserved in the LGIP Reserve Contingency Fund amount will be decreased accordingly, with the same amount then made available for PROJECT costs. Both PARTIES further recognize that the amounts reserved within the LGIP Reserve Contingency Fund may not be disbursed in a timely manner, or disbursed at all, by LGIP.

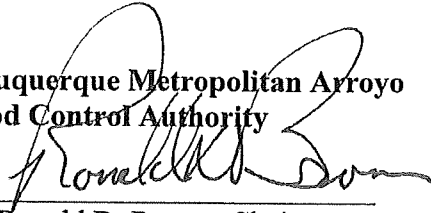
The terms and conditions of the ORIGINAL AGREEMENT will remain unchanged and will continue in full force and effect unless there is a conflict between the terms and conditions of this

FIRST AMENDMENT TO
"AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR AGENCY
AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT"

FIRST AMENDMENT, and the terms and conditions of the ORIGINAL AGREEMENT, in which case the terms and conditions of the FIRST AMENDMENT to ORIGINAL AGREEMENT will control.

IN WITNESS WHEREOF, the undersigned have caused this FIRST AMENDMENT to be executed as of the day and year set forth above.

**Albuquerque Metropolitan Arroyo
Flood Control Authority**



By: Ronald D. Brown, Chair
Board of Directors

Attest:



Danny Hernandez, Secretary-Treasurer,
Board of Directors

Date: 8/27/09

City of Albuquerque



Ed Adams, P.E.
Chief Administrative Officer

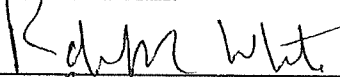
10-19-09
Date



Michael Riordan, P.E.
Acting Director, Department of Municipal Development

10/14/09
Date

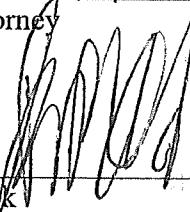
Reviewed as to Form:



City Attorney

10-6-9
Date

Attest:



City Clerk

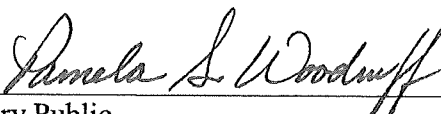
10/27/09
Date

FIRST AMENDMENT TO
"AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR AGENCY
AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT"

ACKNOWLEDGMENT

STATE OF NEW MEXICO)
)ss.
COUNTY OF BERNALILLO)

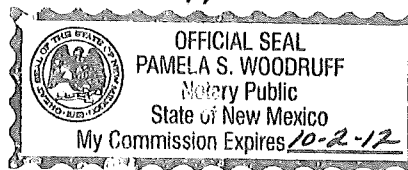
This instrument was acknowledged before me on August 27, 2009, by Ronald D. Brown, Chair of the Board of Directors, on behalf of the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA), a political subdivision of the State of New Mexico.



Notary Public

My Commission Expires:

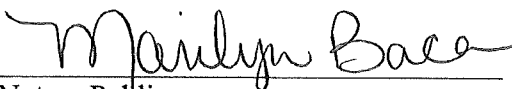
10-2-12



ACKNOWLEDGMENT

STATE OF NEW MEXICO)
)ss.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on OCTOBER 19, 2009, by Ed Adams, P.E., Chief Administrative Officer for the City of Albuquerque, a New Mexico municipal corporation.



Notary Public

My Commission Expires:

06/03/2012

2012-29

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT 2012

THIS AGREEMENT is made and entered into this 12th day of September, 2012, by and between the ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY, a political subdivision of the State of New Mexico ("AMAFCA"), and the NEW MEXICO DEPARTMENT OF TRANSPORTATION, ("DEPARTMENT") individually referred to as "PARTY" and collectively referred to as the "PARTIES."

Contract # D13851

Vendor # _____

RECITALS:

1. **WHEREAS**, the DEPARTMENT's Embudo I-40 Channel intercepts storm flows from drainage basins north and south of I-40 and diverts said flows into AMAFCA's Embudo Arroyo Channel that discharges into AMAFCA's North Diversion Channel; and
2. **WHEREAS**, the DEPARTMENT, and AMAFCA are required to maintain the hydraulic performance of said flood control facilities as they are recognized by the Department of Homeland Security Federal Emergency Management Agency as providing 100-year flood protection; and
3. **WHEREAS**, it is in the public interest to minimize traffic impacts to the traveling public by having all traffic control, detours and traffic lane closures under the control of a single agency, during routine maintenance and or emergency work on flood control facilities; and
4. **WHEREAS**, AMAFCA and the City of Albuquerque (CITY) have negotiated and have entered into a simultaneous and complementary agreement for an Area Wide Maintenance Agreement that identifies AMAFCA's contribution of funding and the CITY's contributions for design, construction, and construction management; and
5. **WHEREAS**, the execution of the hereinafter described services is necessary for AMAFCA and the DEPARTMENT to accomplish their mission of providing flood control services to the greater Albuquerque area; and

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT 2012

6. **WHEREAS**, the DEPARTMENT has the authority pursuant to NMSA 1978, Section 67-3-28 to enter into cooperative agreements with AMAFCA to share the costs of highway projects, including related storm drainage projects; and

7. **WHEREAS**, AMAFCA and the DEPARTMENT entered into the “AGREEMENT FOR DESIGN, CONSTRUCTION AND CONSTRUCTION ENGINEERING SERVICES FOR AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT” dated May 21, 2008, with AMENDMENT NUMBER ONE to that agreement dated October 21, 2009 and AMENDMENT NUMBER TWO to that agreement dated December 15, 2011; and

8. **WHEREAS**, AMAFCA and the DEPARTMENT agree that the previous agreement governing their design, construction, and maintenance service obligations sufficiently and thoroughly met their needs and requirements; and

9. **WHEREAS**, based on the success of the previous agreement, both PARTIES wish to enter into this AGREEMENT to govern their continued design, construction, and construction management service obligations.

NOW THEREFORE, in consideration of the covenants contained herein, and pursuant to the NMSA 1978, Section 67-3-28, as amended, the PARTIES AGREE AS FOLLOWS:

Section One – Purpose of Agreement

1.1 Define responsibilities between the PARTIES for the funding of design, construction, and construction management services for an area-wide maintenance and emergency repair contract for surface flood control structures, herein known as the PROJECT.

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT 2012

1.2 Establish lines of communication and contract obligations between the PARTIES for routine maintenance and emergency repair work to be performed on each agency's flood control structures and within each agency's rights-of-way.

1.3 Establish a fiscal agent to procure and administer a professional engineering services contract to provide design and construction engineering services as required to design, bid, award and administer a construction contract to provide routine maintenance and emergency flood control facility repair work acceptable to the PARTIES.

1.4 Establish a fiscal agent to procure and administer the construction contract for the PROJECT, with the provision that the construction contract will remain open through September 2013, in order to allow for emergency flood control facility repairs during the storm seasons of 2012 and 2013.

1.5 To establish each PARTY's responsibilities in defining maintenance needs within each PARTY's flood control facilities that will be included in the contract documents for the PROJECT. This will include participation in identification and prioritization of required maintenance work within each agency's jurisdiction and will also include the inspection and acceptance of said maintenance work by each of the PARTIES before final payment is made to the PROJECT contractor by the fiscal agent.

1.6 Provide for the delegation of daily inspection of maintenance work within each of the PARTY's rights of way.

1.7 Establish a command structure for emergency flood control work. The PARTIES agree to follow an Incident Command System (ICS) to standardize on-scene incident management.

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT 2012

Section Two – AMAFCA Agrees to:

2.1 Be the fiscal agent for the purposes of this Agreement. All funds from the PARTIES will be held in a separate AMAFCA-held interest-bearing bank account (the “PROJECT ACCOUNT”). Interest accrued will be tracked on behalf of each PARTY, based on the timing and amount of their funding contribution(s) and respective disbursements. Interest accrued will be available for PROJECT costs incurred by each PARTY. At the completion of the PROJECT, AMAFCA will refund any remaining PROJECT funding and/or interest accrued to the respective PARTIES. AMAFCA shall make available to the PARTIES, all records, receipts, and other documentation with respect to all matters concerning this AGREEMENT and shall have the PROJECT ACCOUNT included in its annual audit.

2.2 Procure engineering services as necessary to provide design and construction engineering services through the Request for Proposal process. The engineer will be responsible for gathering infrastructure needs from each of the PARTIES and incorporating that information into the contract documents. The contract documents will include separate bid lots for each PARTY, and each bid lot will include separate task orders for work, identified by type or location of work, with each task order to have a separate listing of bid items and quantity listing, separate notice to proceed date, construction days allowed, liquidated damages, and acceptance of completion of work. The engineer will also assist AMAFCA in calling for bids, conducting the pre-bid tour, opening bids, and making recommendation of award to AMAFCA. This work shall be referred to as the “PROJECT DESIGN”. The engineer will also provide project management, to include the preconstruction conference, contract administration, inspection of the construction, geotechnical testing, preparation of monthly pay estimates and change orders, certification of completed work, preparation of record drawings, and other supervision of construction to assure the construction is in conformance with the plans and specifications for the PROJECT. This work shall be referred to as the “PROJECT MANAGEMENT”. Each PARTY will be required to have two representatives on the Selection Advisory Committee for this procurement. The

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT 2012

Selection Advisory Committee will rank proposals and recommend the top three respondents to the AMAFCA Board of Directors. Upon AMAFCA Board of Directors' acceptance of the Selection Advisory Committee recommendation, AMAFCA will negotiate an agreement with the top ranked engineer. The DEPARTMENT will provide input on the scope and fees; however, final negotiations and approval of the PROJECT DESIGN and PROJECT MANAGEMENT contract will be at AMAFCA's sole discretion.

2.3 Upon AMAFCA approval of the PROJECT DESIGN contract, AMAFCA will authorize the engineer to begin work and will invoice the DEPARTMENT for its portion of the PROJECT DESIGN contract costs, including New Mexico gross receipts tax, estimated to be Twenty Thousand Dollars (\$20,000.00) each. AMAFCA will provide its portion of the PROJECT DESIGN contract costs, including New Mexico gross receipts tax, also estimated to be Twenty Thousand Dollars (\$20,000.00), and deposit both AMAFCA and the DEPARTMENT's funding into the PROJECT ACCOUNT. AMAFCA will administer and manage the PROJECT DESIGN contract and will approve and make all required payments to the selected engineer.

2.4 Provide at least one Professional Engineer from staff to participate and assist in the identification and prioritization of AMAFCA maintenance and repair work to be included in the contract documents. This maintenance and repair work is expected to total Two-Hundred Thousand Dollars (\$200,000.00) in construction costs. This work will be included within the "AMAFCA Bid Lot" of the contract documents.

2.5 Bid and award the PROJECT through its normal construction procurement method. Upon successful award of the construction contract, AMAFCA will invoice the DEPARTMENT for its respective bid lots at actual bid costs, including New Mexico gross receipts tax, plus ten percent (10%) to cover PROJECT MANAGEMENT costs. AMAFCA will provide its funding for the AMAFCA Bid Lot actual bid costs, including New Mexico gross receipts tax, plus ten

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT 2012

percent (10%) to cover PROJECT MANAGEMENT costs and deposit both AMAFCA and the DEPARTMENT's funding into the PROJECT ACCOUNT.

2.6 Direct the PROJECT contractor to complete work through a task order process. If an item of work needed to complete a task order is not covered in the contract documents, or if additional task orders are identified and funded during the course of the PROJECT, AMAFCA will initiate a change order to the PROJECT contract by requesting a proposal from the contractor. Should this work require additional engineering design services, AMAFCA will negotiate with the engineer and approve additional engineering design services, with the understanding that the requesting PARTY will concur with the scope and fees for, and fund such additional engineering design services. The PARTY with a task order that requires a change order will approve the change order before the change order is finalized by AMAFCA and sent to the contractor. Upon approval of the change order by AMAFCA, the requesting PARTY, and the contractor, AMAFCA will direct the contractor to proceed with the change order and will invoice the requesting PARTY the amount of the additional engineering design services, if any, plus the amount of the change order, to include New Mexico gross receipts tax, plus ten percent (10%) for PROJECT MANAGEMENT.

2.7 Process and pay monthly applications for work completed by the PROJECT contractor. Final payment for each task order will be made by AMAFCA only after the PARTY responsible for maintenance of the facility accepts the work.

2.8 Work with the DEPARTMENT to develop Emergency Task Orders as may be needed. Should this work require additional engineering design services, AMAFCA will negotiate with the engineer and approve additional engineering design services, with the understanding that the requesting PARTY will concur with the scope and fees for, and fund such additional engineering design services. If an item of work needed to complete an Emergency Task Order is not covered in the contract documents, AMAFCA will request a new unit price proposal from the PROJECT

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT 2012

contractor. The PARTY requesting an Emergency Task Order will approve the change order before the Emergency Task Order change order is finalized by AMAFCA and sent to the contractor. Upon approval of the Emergency Task Order change order by AMAFCA, the requesting PARTY and the contractor, AMAFCA will issue a notice to proceed on the Emergency Task Order change order to the contractor and will invoice the requesting PARTY the amount of the additional engineering design services, if any, plus the amount of the resulting change order to the PROJECT contract, to include New Mexico gross receipts tax, plus ten percent (10%) for PROJECT MANAGEMENT.

2.9 Hold a preparatory meeting with the contractor and the respective flood control facility owner before a notice to proceed on each task order is given. The purpose of the preparatory meeting is to identify the scope of work associated with the task order, care and diversion of water, time constraints, any special conditions and acceptance criteria for final acceptance of the work by the relevant PARTY.

2.10 Implement all terms and conditions of the PROJECT contract.

2.11 Provide copies of all geotechnical testing reports and daily inspection reports as requested by the PARTIES.

2.12 Halt work to allow remedial measures to be taken should the work be out of compliance with the plans and specifications.

2.13 Fund any AMAFCA-authorized Emergency Task Order(s) on AMAFCA facilities, to include any additional engineering design services and change order amounts, including New Mexico gross receipts tax, plus 10% for PROJECT MANAGEMENT.

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT 2012

2.14 Provide, through an auxiliary contract, or change order to the PROJECT construction contract, any and all traffic control needed during an Emergency Task Order executed for an AMAFCA flood control facility.

2.15 Provide daily inspection of maintenance work performed on AMAFCA facilities through the PROJECT MANAGEMENT contract.

2.16 Continue to own, operate and maintain any AMAFCA flood control facility maintained, modified or repaired pursuant to this AGREEMENT.

2.17 Shall not allow the contractor to perform any work on any drainage facility that requires traffic control on a state owned facility without an approved traffic control plan/permit that is issued by the DEPARTMENT's District Three Traffic Section

Section Three – DEPARTMENT Agrees to:

3.1 Designate two Professional Engineers from the DEPARTMENT's staff to participate in the Selection Advisory committee for the PROJECT DESIGN and PROJECT MANAGEMENT.

3.2 Fund its portion of the PROJECT DESIGN costs, including New Mexico gross receipts tax, estimated to be Twenty Thousand Dollars (\$20,000.00). AMAFCA may invoice the DEPARTMENT for this amount anytime after AMAFCA approves the PROJECT DESIGN contract. The DEPARTMENT will make payment to AMAFCA within forty-five (45) days of receipt of an invoice from AMAFCA.

3.3 Provide at least one Professional Engineer from the DEPARTMENT's staff to participate and assist in the identification and prioritization of the DEPARTMENT maintenance and repair work to be included in the contract documents. This maintenance and repair work, during the

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT 2012

2012/2013 state fiscal year, is expected to total approximately Two-Hundred Thousand Dollars (\$200,000.00) in construction costs. This work will be included within the "DEPARTMENT Bid Lot" of the contract documents.

3.4 Fund the DEPARTMENT Bid Lot portion of the PROJECT at actual bid cost, plus New Mexico gross receipts tax, plus ten percent (10%) for PROJECT MANAGEMENT. The DEPARTMENT will make payment to AMAFCA within forty-five (45) days of receipt of an invoice from AMAFCA. An invoice may be sent by AMAFCA to the DEPARTMENT any time after successful award of the PROJECT construction contract.

3.5 Review, approve and fund any change order(s) necessary for completion of any task order within the DEPARTMENT Bid Lot, or for any additional task orders identified and funded by the DEPARTMENT during the course of the PROJECT. Upon approval of the change order by AMAFCA, the DEPARTMENT, and the contractor, the DEPARTMENT will pay to AMAFCA the amount of the additional engineering design services, if any, plus the amount of the change order, to include New Mexico gross receipts tax, plus ten percent (10%) for PROJECT MANAGEMENT. The DEPARTMENT will make payment to AMAFCA within forty-five (45) days of receipt of an invoice from AMAFCA.

3.6 Develop, review, approve and fund any Emergency Task Order(s) and resulting change order(s) to the PROJECT contract for any emergency repair work deemed necessary by the DEPARTMENT during the term of the PROJECT construction contract. Upon approval of the Emergency Task Order change order(s) by AMAFCA, the DEPARTMENT, and the contractor, the DEPARTMENT will pay to AMAFCA the amount of the additional engineering design services, if any, plus the amount of the change order, to include New Mexico gross receipts tax, plus ten percent (10%) for PROJECT MANAGEMENT. The DEPARTMENT will make payment to AMAFCA within forty-five (45) days of receipt of an invoice from AMAFCA.

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT 2012

3.7 Provide, through an auxiliary contract or change order to the PROJECT construction contract, any and all traffic control needed during an Emergency Task Order executed for a DEPARTMENT flood control facility.

3.8 Provide daily inspection of maintenance work performed on DEPARTMENT facilities through the PROJECT MANAGEMENT contract.

3.9 Participate in the preparatory meeting with the contractor as the facility owner before a notice to proceed on each task order is given. The DEPARTMENT will attend the final inspection of the work and provide acceptance of maintenance work performed to AMAFCA.

3.10 Continue to own, operate and maintain any DEPARTMENT flood control facility maintained, modified or repaired pursuant to this AGREEMENT.

Section Four –The Parties Agree:

4.1 To review and, if appropriate, jointly approve the construction documents prior to bidding of the PROJECT. The PARTIES agree that the framework and base specifications for the construction documents will be the current edition of the New Mexico Department of Transportation Specifications for Bridge and Highway Construction, as modified by the PARTIES with supplemental specifications.

4.2 To each designate a Claims Resolution Officer. The Claims Resolution Officer shall have authority to settle PROJECT construction contract claims up to a maximum of Twenty Thousand Dollars (\$20,000.00). Each PARTY's Claims Resolution Officer shall have the authority and responsibility to investigate, negotiate and resolve any and all claims that may result from construction of that PARTY's Bid Lot and/or Emergency Task Order(s), up to the Claims Resolution Officer's claim settlement limit. When such claims are settled, the Claims

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT 2012

Resolution Officer shall notify AMAFCA who will then execute a change order to the PROJECT construction contract to effect the terms of the claims settlement. Upon execution of the change order, AMAFCA will invoice the responsible PARTY for the claim settlement amount, if any, and AMAFCA will then make payment of the claim as part of the next normal monthly pay estimate due to the PROJECT construction contractor. The responsible PARTY will make payment to AMAFCA within forty-five (45) days of receipt of an invoice from AMAFCA. Should the Claims Resolution Officer and the PROJECT construction contractor fail to agree on the resolution of any such claim, or if the claim is greater than the Claims Resolution Officer's claim settlement limit, the PROJECT construction contract shall mandate arbitration under the current Construction Industry Arbitration Rules of the American Arbitration Association, provided that the AMAFCA Board of Directors reserves its rights to consider or reconsider any such claim regarding the AMAFCA Bid Lot and/or an AMAFCA Emergency Task Order, and make resolution thereof. In the event of any claim, the PARTY whose Task Order(s) has resulted in the claim shall be responsible for the claim and not the other PARTY, and shall take all actions necessary to resolve the claim under the current rules of the American Arbitration Association. In the event the Arbitrator determines claim settlement payment is due to the PROJECT construction contractor, the PARTY shall notify AMAFCA who will then execute a change order to the PROJECT construction contract to effect the terms of the claims settlement. Upon execution of the change order, AMAFCA will invoice the responsible PARTY for the claim settlement amount, if any, and AMAFCA will then make payment of the claim as part of the next normal monthly pay estimate due to the PROJECT construction contractor. The responsible PARTY will make payment to AMAFCA within forty-five (45) days of receipt of an invoice from AMAFCA.

4.3 To establish a command structure for emergency work. The PARTIES agree to follow an Incident Command System (ICS) to standardize on-scene incident management. Each PARTY will identify an Incident Commander that will be responsible to direct emergency operations for each agency's flood control facilities. The Incident Commander will be the lead in developing

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT 2012

Emergency Task Orders and will have the authority to direct AMAFCA to deploy the PROJECT construction contractor as needed. The PARTIES and each of their respective Incident Commanders will attend the class titled "Introduction to the Incident Command System, ICS-100", to be set up by AMAFCA within two (2) months of approval of this AGREEMENT.

4.4 That this AGREEMENT is not intended by any of the provisions of any part of the AGREEMENT to create in the public, or any member thereof, a third party beneficiary or to authorize anyone not a party to the AGREEMENT to maintain a suit for wrongful death, bodily and/or personal injury to person, damage to property, and/or any other claim(s) whatsoever pursuant to the provisions of this AGREEMENT.

4.5 That by entering into this AGREEMENT, the PARTIES shall not be responsible for liability incurred as a result of the other PARTIES' acts or omissions in connection with this AGREEMENT. Any liability incurred in connection with this AGREEMENT is subject to the immunities and limitations of the New Mexico Tort Claims Act, NMSA 1978, Sections 41-4-1, et seq., (as amended). This paragraph is intended only to define the liabilities between the PARTIES hereto and it is not intended to modify, in any way, the PARTIES' liabilities as governed by common law or the New Mexico Tort Claims Act. AMAFCA and their "public employees" as defined in the New Mexico Tort Claims Act, and the DEPARTMENT and its "public employees" as defined in the New Mexico Tort Claims Act, do not waive sovereign immunity, do not waive any defense and/or do not waive any limitation of liability pursuant to law. No provision in this AGREEMENT modifies and/or waives any provision of the New Mexico Tort Claims Act.

4.6 That this AGREEMENT incorporates all the agreements, covenants, and understandings between the PARTIES hereto concerning the subject matter hereof. No prior agreements or understandings, verbal or otherwise, of the PARTIES or their agents shall be valid or enforceable unless embodied in this AGREEMENT. Performance of all duties and obligations herein shall

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT 2012

conform with and do not contravene any state, local, or Federal statutes, regulations, rules, or ordinances. All notices with respect to this AGREEMENT shall be in writing and shall be delivered personally, sent via confirmed fax, or sent postage prepaid by United States Certified Mail, return receipt requested, to the addresses set forth below or such other addresses as hereafter specified in writing by one PARTY to the other:

AMAFCA
Attn: Executive Engineer
2600 Prospect Ave. NE
Albuquerque, New Mexico 87107

New Mexico Department of Transportation
District Three Engineer
7500 Pan American Freeway NE
P.O. Box 91750
Albuquerque, New Mexico 87199-1750

4.7 That this AGREEMENT shall not take effect until executed by all of the PARTIES hereto.

4.8 That in the event that any portion of this AGREEMENT is determined to be void, unconstitutional or otherwise unenforceable, the remainder of this AGREEMENT shall remain in full force and effect.

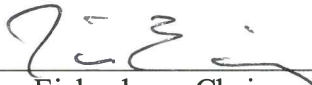
4.9 Disputes under this AGREEMENT will be referred to binding arbitration under the provisions of the New Mexico Uniform Arbitration Act.

4.10 This AGREEMENT shall not be altered, modified, or amended except by an instrument in writing and executed by the PARTIES hereto.

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT 2012

IN WITNESS WHEREOF, the parties have set their hands and seals this day and year set forth below.

ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY

By: 
Tim Eichenberg, Chairman
AMAFCA Board of Directors


Date: 9/12/12

ATTEST:

By: 
Bruce Thomson, Secretary/Treasurer
AMAFCA Board of Directors

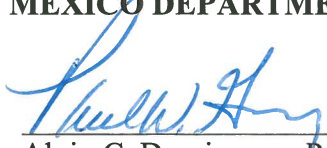
Date: 9/12/12

APPROVED AS TO FORM BY AMAFCA'S ATTORNEY

By: 
Marcus J. Rael, Jr.
Legal Counsel

Date: 09/12/12

NEW MEXICO DEPARTMENT OF TRANSPORTATION

By: 
For Alvin C. Dominguez, P.E.
Cabinet Secretary

Date: 9/7/12

AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR
AGENCY AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT 2012

CONCUR:

By: Tamara Haas Date: 8/23/12
Tamara Haas, P.E.
District Three Engineer

By: Max E. Valerio Date: 9/5/12
Max E. Valerio, P.E.
Infrastructure Division Director

**APPROVED AS TO FORM AND LEGAL SUFFICIENCY BY THE DEPARTMENT'S
OFFICE OF GENERAL COUNSEL**

By: Cynthia A. Christ Date: 8-29-12
Assistant General Counsel

**SECOND AMENDMENT TO
"AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR AGENCY
AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT"**

THIS SECOND AMENDMENT to Agreement for Design, Construction and Construction Engineering Services for Agency and Area-Wide Flood Control Maintenance Contract is made and entered into this 16 day of December, 2011, by and between the Albuquerque Metropolitan Arroyo Flood Control Authority, a political subdivision of the State of New Mexico (hereinafter referred to as "AMAFCA"), and the City of Albuquerque, a municipal corporation (hereinafter referred to as "the CITY").

RECITALS:

1. **WHEREAS**, on June 2, 2008, AMAFCA and the CITY entered into the agreement titled "Agreement for Design, Construction and Construction Engineering Services for Agency and Area-Wide Flood Control Maintenance Contract" ("ORIGINAL AGREEMENT") to define responsibilities for the funding, design, construction, construction management of the PROJECT and to establish a fiscal agent to procure and administer professional engineering services contract(s) and to procure and administer the construction contract(s) for the PROJECT; and
2. **WHEREAS**, the ORIGINAL AGREEMENT provided for a construction contract that would remain open through September 2009, in order to allow for emergency flood control facility repairs during the storm seasons of 2008 and 2009; and
3. **WHEREAS**, the CITY and AMAFCA had funding programmed for FY-2010 and FY-2011 for similar PROJECT type work, and desired to follow the same course of action and respective participatory roles as were described in the ORIGINAL AGREEMENT in order to procure professional engineering services and a follow-on construction contract for planned and emergency flood control facility repairs prior to and during the storm seasons of 2010 and 2011; and

SECOND AMENDMENT TO
"AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR AGENCY
AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT"

4. **WHEREAS**, the CITY and AMAFCA executed the FIRST AMENDMENT to the ORIGINAL AGREEMENT to perform said work prior to and during the storm seasons of 2010 and 2011; and
5. **WHEREAS**, the CITY and AMAFCA have funding programmed for FY-2012 and FY-2013 for similar PROJECT type work, and desire to follow the same course of action and respective participatory roles as were described in the ORIGINAL AGREEMENT and the FIRST AMENDMENT in order to procure professional engineering services and a follow-on construction contract in order to allow for planned and emergency flood control facility repairs prior to and during the storm seasons of 2012 and 2013.

NOW THEREFORE, AMAFCA and the CITY hereby agree to amend the ORIGINAL AGREEMENT and FIRST AMENDMENT as follows:

In Section One of the FIRST AMENDMENT, Purpose of Agreement:

Delete paragraph 1.1 in its entirety and replace with the following:

1.1 Define responsibilities between the PARTIES for the funding of design, construction, and construction management services for the third phase of an area-wide maintenance and emergency repair contract for surface flood control structures, herein known as the PROJECT.

Delete paragraph 1.3 in its entirety and replace with the following:

1.3 Continue to use AMAFCA as the fiscal agent to procure and administer a professional engineering services contract to provide design and construction engineering services as required to design, bid, award and administer a construction contract to provide routine maintenance and emergency flood control facility repair work acceptable to the PARTIES prior to and during the storm seasons of 2012 and 2013.

SECOND AMENDMENT TO
"AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR AGENCY
AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT"

Delete paragraph 1.4 in its entirety and replace with the following:

1.4 Continue to use AMAFCA as the fiscal agent to procure and administer the construction contract for the PROJECT, with the provision that the construction contract will remain open through November 2013, in order to allow for planned and emergency flood control facility repairs prior to and during the storm seasons of 2012 and 2013.

In Section Three of the ORIGINAL AGREEMENT:

Delete paragraph 3.3 in its entirety and replace with the following:

3.3 Provide at least one Professional Engineer from CITY staff to participate and assist in the identification and prioritization of CITY maintenance and repair work to be included in the contract documents. This maintenance and repair work is expected to total approximately \$150,000.00 in construction costs. This work will be included within the "CITY Bid Lot" of the contract documents. This maintenance and repair work may be increased in scope and quantity depending on the CITY's availability of further funding.

In Section Four of the ORIGINAL AGREEMENT:

Add the following Paragraph 4.11

4.11 That any CITY or AMAFCA funding remaining in the PROJECT ACCOUNT shall remain in the PROJECT ACCOUNT and be made available for the PROJECT. The PARTIES further recognize that the PROJECT ACCOUNT has been invested in the State of New Mexico Local Government Investment Pool ("LGIP") and effective March 4, 2009, based on balances in the PROJECT ACCOUNT on September 15, 2009, a portion of such remaining funds has been set aside in the LGIP Reserve Contingency Fund, and

SECOND AMENDMENT TO
"AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR AGENCY
AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT"

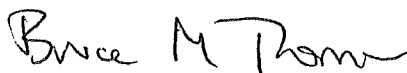
currently is not available for withdrawal. Some disbursements of the LGIP Reserve Contingency Fund have been made since the FIRST AMENDMENT. As of November 10, 2011, the CITY's total balance in the PROJECT ACCOUNT was \$115,464.64, of which \$350.47 is set aside in the LGIP Reserve Contingency Fund. As of November 10, 2011, AMAFCA's total balance in the PROJECT ACCOUNT was \$19,918.19, of which \$1,774.28 is set aside in the LGIP Reserve Contingency Fund. As further distributions are made by LGIP, the amount reserved in the LGIP Reserve Contingency Fund amount will be decreased accordingly, with the same amount then made available for PROJECT costs. Both PARTIES further recognize that the amounts reserved within the LGIP Reserve Contingency Fund may not be disbursed in a timely manner, or disbursed at all, by LGIP.

The terms and conditions of the ORIGINAL AGREEMENT and FIRST AMENDMENT will remain unchanged and will continue in full force and effect unless there is a conflict between the terms and conditions of this SECOND AMENDMENT, and the terms and conditions of the ORIGINAL AGREEMENT and/or FIRST AMENDMENT in which case the terms and conditions of the SECOND AMENDMENT will control.

IN WITNESS WHEREOF, the undersigned have caused this FIRST AMENDMENT to be executed as of the day and year set forth above.

**Albuquerque Metropolitan Arroyo
Flood Control Authority**

Attest:



Bruce M. Thomson, Secretary-Treasurer,
Board of Directors

Date: 12/27/11

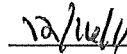

By: Danny Hernandez, Chair
Board of Directors

SECOND AMENDMENT TO
"AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR AGENCY
AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT"

City of Albuquerque



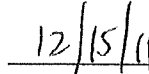
Robert J. Perry
Chief Administrative Officer



Date

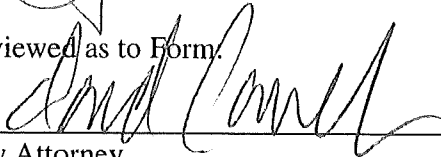


Michael Riordan, P.E.
Director, Department of Municipal Development

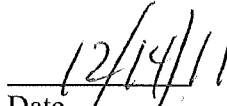


Date

Reviewed as to Form.

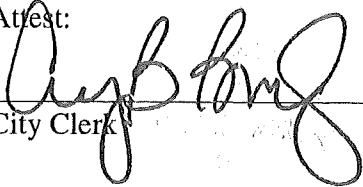


City Attorney

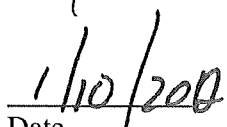


Date

Attest:



City Clerk



Date

**THIRD AMENDMENT TO
“AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR AGENCY
AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT”**

THIS THIRD AMENDMENT to Agreement for Design, Construction and Construction Engineering Services for Agency and Area-Wide Flood Control Maintenance Contract is made and entered into this 26 day of June, 2014, by and between the Albuquerque Metropolitan Arroyo Flood Control Authority, a political subdivision of the State of New Mexico (hereinafter referred to as “AMAFCA”), and the City of Albuquerque, a municipal corporation (hereinafter referred to as “the CITY”).

RECITALS:

1. **WHEREAS**, on June 2, 2008, AMAFCA and the CITY entered into the agreement titled “Agreement for Design, Construction and Construction Engineering Services for Agency and Area-Wide Flood Control Maintenance Contract” (“ORIGINAL AGREEMENT”) to define responsibilities for the funding, design, construction, construction management of the PROJECT and to establish a fiscal agent to procure and administer professional engineering services contract(s) and to procure and administer the construction contract(s) for the PROJECT; and
2. **WHEREAS**, the ORIGINAL AGREEMENT provided for a construction contract that would remain open through September 2009, in order to allow for emergency flood control facility repairs during the storm seasons of 2008 and 2009; and
3. **WHEREAS**, the CITY and AMAFCA had funding programmed for FY-2010 and FY-2011, and again in FY-2012 and FY-2013, for similar PROJECT type work, and desired to follow the same course of action and respective participatory roles as were described in the ORIGINAL AGREEMENT in order to procure professional engineering services and a follow-on construction contract for planned and emergency flood control facility repairs prior to and during the storm seasons of 2010 and 2011, as well as 2012 and 2013; and

THIRD AMENDMENT TO
“AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR AGENCY
AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT”

4. **WHEREAS**, the CITY and AMAFCA executed the FIRST AMENDMENT to the ORIGINAL AGREEMENT to perform said work prior to and during the storm seasons of 2010 and 2011; and
5. **WHEREAS**, the CITY and AMAFCA executed the SECOND AMENDMENT to the ORIGINAL AGREEMENT to perform said work prior to and during the storm seasons of 2012 and 2013; and
6. **WHEREAS**, the CITY and AMAFCA had funding for FY 2013 and FY 2014 for similar PROJECT type work, and desired to follow the same course of action and respective participatory roles as were described in the ORIGINAL AGREEMENT, the FIRST AMENDMENT and the SECOND AMENDMENT in order to procure professional engineering services and a follow-on construction contract in order to allow for planned and emergency flood control facility repairs prior to and during the storm seasons of 2013 and 2014; and
7. **WHEREAS**, The CITY had additional funding of \$325,000.00 at the end of FY 2013 which allowed for additional maintenance and repair work and which was increased in scope and quantity due to that funding for the emergency work during the summer of 2013 and for work on the Agency and Area-Wide Flood Control Maintenance Contract 2013-2014; and
8. **WHEREAS**, The CITY and AMAFCA have funding programmed for FY 2014 and 2015 for similar PROJECT type work, and desire to follow the same course of action and respective participatory roles as were described in the ORIGINAL AGREEMENT, the FIRST AMENDMENT and the SECOND AMENDMENT in order to procure professional engineering services and a follow-on construction contract in order to allow for planned and emergency flood control facility repairs prior to and during the storm seasons of 2014 and 2015; and

THIRD AMENDMENT TO
“AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR AGENCY
AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT”

9. **WHEREAS**, The CITY and AMAFCA have found the agreement to be of great value to the citizens of Albuquerque and the respective agencies and, if available funding is identified, wish to continue the agreement without having to amend for additional future years.

NOW THEREFORE, AMAFCA and the CITY hereby agree to amend the ORIGINAL AGREEMENT, FIRST AMENDMENT and SECOND AMENDMENT as follows:

In Section One of the ORIGINAL AGREEMENT, Purpose of Agreement:

Delete paragraph 1.1 in its entirety and replace with the following:

1.1 Define responsibilities between the PARTIES for the funding of design, construction, and construction management services for the fourth and future phases of the area-wide maintenance and emergency repair contract for surface flood control structures, herein known as the PROJECT.

Delete paragraph 1.3 in its entirety and replace with the following:

1.3 Continue to use AMAFCA as the fiscal agent to procure and administer a professional engineering services contract to provide design and construction engineering services as required to design, bid, award and administer a construction contract to provide routine maintenance and emergency flood control facility repair work acceptable to the PARTIES prior to and during the storm seasons of 2014 and future years as directed by the COA Project Manager and as funding becomes available.

Delete paragraph 1.4 in its entirety and replace with the following:

1.4 Continue to use AMAFCA as the fiscal agent to procure and administer the construction contract for the PROJECT, with the provision that the construction contract will remain open at

THIRD AMENDMENT TO
“AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR AGENCY
AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT”

least until November 2014, in order to allow for planned and emergency flood control facility repairs prior to and during the storm season of 2014 and future years as directed by the City Project Manager and as funding becomes available.

In Section Three of the ORIGINAL AGREEMENT:

Delete paragraph 3.3 in its entirety and replace with the following:

3.3 Provide at least one Professional Engineer, acting as the CITY Project Manager, from CITY staff to participate and assist in the identification and prioritization of CITY maintenance and repair work to be included in the contract documents. This maintenance and repair work is expected to total approximately \$300,000.00 in design and construction costs for FY15. This work will be included within the “CITY Bid Lot” of the contract documents. This maintenance and repair work may be increased in scope and quantity depending on the CITY’s availability of further funding for FY15 and future years.

In Section Four of the ORIGINAL AGREEMENT:

Delete Paragraph 4.11 in its entirety, which was added to the ORIGINAL AGREEMENT by the SECOND AMENDMENT, and replace with the following

4.11 That any CITY or AMAFCA funding remaining in the PROJECT ACCOUNT shall remain in the PROJECT ACCOUNT and be made available for the PROJECT. The PARTIES further recognize that the PROJECT ACCOUNT has been invested in the State of New Mexico Local Government Investment Pool (“LGIP”) and effective March 4, 2009, based on balances in the PROJECT ACCOUNT on September 15, 2009, a portion of such remaining funds has been set aside in the LGIP Reserve Contingency Fund, and currently is not available for withdrawal. Some disbursements of the LGIP Reserve Contingency Fund have been made since the FIRST AMENDMENT and SECOND

THIRD AMENDMENT TO
"AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR AGENCY
AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT"

AMENDMENT. As of June 12, 2014, the CITY's total balance in the PROJECT ACCOUNT was \$153,585.62 and is now invested at Wells Fargo. The CITY LGIP Reserve Contingency Fund amount is \$75.09 and is set aside in the LGIP Reserve Contingency Fund. As of June 12, 2014, AMAFCA's total balance in the PROJECT ACCOUNT was \$401,386.51, and is now invested at Wells Fargo. The AMAFCA LGIP Reserve Contingency Fund amount is \$384.19 and is set aside in the LGIP Reserve Contingency Fund. As further distributions are made by LGIP, the amount reserved in the LGIP Reserve Contingency Fund amount will be decreased accordingly, with the same amount then made available for PROJECT costs. Both PARTIES further recognize that the amounts reserved within the LGIP Reserve Contingency Fund may not be disbursed in a timely manner, or disbursed at all, by LGIP.

Add the following Paragraph 4.12

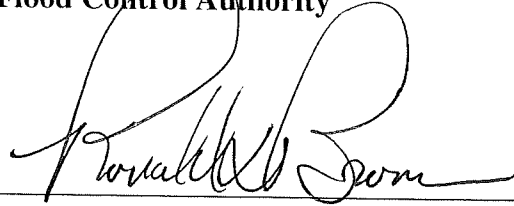
- 4.12 This agreement may be terminated by either party upon thirty (30) days written notice; however, the CITY will be responsible for any task order that a notice to proceed has been issued and the work will be completed and paid for at the agreed upon rates. In no event shall AMAFCA or the CITY be liable for any work undertaken after notice of termination has been given by either party.

The terms and conditions of the ORIGINAL AGREEMENT, FIRST AMENDMENT and SECOND AMENDMENT will remain unchanged and will continue in full force and effect unless there is a conflict between the terms and conditions of this THIRD AMENDMENT, and the terms and conditions of the ORIGINAL AGREEMENT and/or FIRST AMENDMENT and/or the SECOND AMENDMENT, in which case the terms and conditions of the THIRD AMENDMENT will control.

IN WITNESS WHEREOF, the undersigned have caused this THIRD AMENDMENT to be executed as of the day and year set forth above.

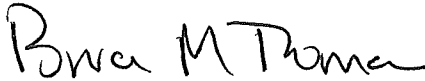
THIRD AMENDMENT TO
"AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR AGENCY
AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT"

Albuquerque Metropolitan Arroyo
Flood Control Authority



By: Ronald D. Brown, Chair
Board of Directors

Attest:

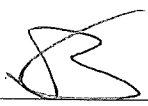


Bruce M. Thomson, P.E., Secretary-Treasurer
Board of Directors

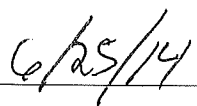
Date: 6/26/14

THIRD AMENDMENT TO
"AGREEMENT FOR DESIGN, CONSTRUCTION AND
CONSTRUCTION ENGINEERING SERVICES FOR AGENCY
AND AREA-WIDE FLOOD CONTROL MAINTENANCE CONTRACT"

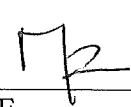
City of Albuquerque



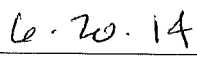
Robert J. Perry
Chief Administrative Officer



Date

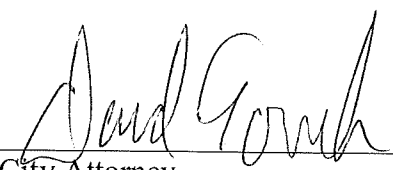


Michael Riordan, P.E.
Director, Department of Municipal Development

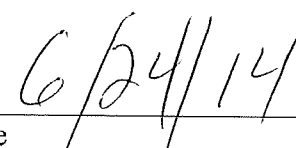


Date

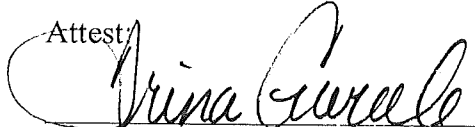
Reviewed as to Form:



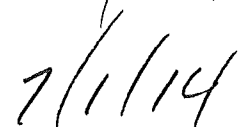
City Attorney



Date

Attest:


City Clerk



Date

NPDES PERMIT No. NMR04A000



MS4 PROGRAM SUMMARIES FOR ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY

DECEMBER 1, 2021



**2600 PROSPECT AVENUE NE
ALBUQUERQUE, NM 87107
(505) 884-2215**



Summary of AMAFCA's MS4 Dissolved Oxygen Program FY 2021 (July 1, 2020 – June 30, 2021)

NPDES Permit No. NMR04A000

Part I.C.1.d - Special Conditions, Compliance with Water Quality Standards and
Part I.C.3.a - Endangered Species Act (ESA) Requirements - Dissolved Oxygen Strategy

AMAFCA monitors and evaluates the potential effect of stormwater discharges related to dissolved oxygen (DO) in the Rio Grande. The DO of stormwater discharges to the Rio Grande at the North Diversion Channel (NDC) outfall has been monitored by AMAFCA and cooperative Municipal Separate Storm Sewer System (MS4) agencies, with communication with the United States Fish and Wildlife Service (USFWS) and EPA, since 2004. Several strategies and constructed modifications to the NDC Embayment have been implemented from 2011-2016. Currently, in normal river flow conditions, water from the Rio Grande will not stagnate in the NDC Embayment and create low DO conditions. These improvement projects provided control measures to eliminate conditions that cause or contribute to exceedances of applicable DO water quality standards.

In accordance with AMAFCA's Stormwater Management Program (SWMP), AMAFCA has and will continue to assess the potential effect of stormwater discharges into the Rio Grande by collecting and evaluating additional DO data.

AMAFCA MS4 Sonde Program Summary

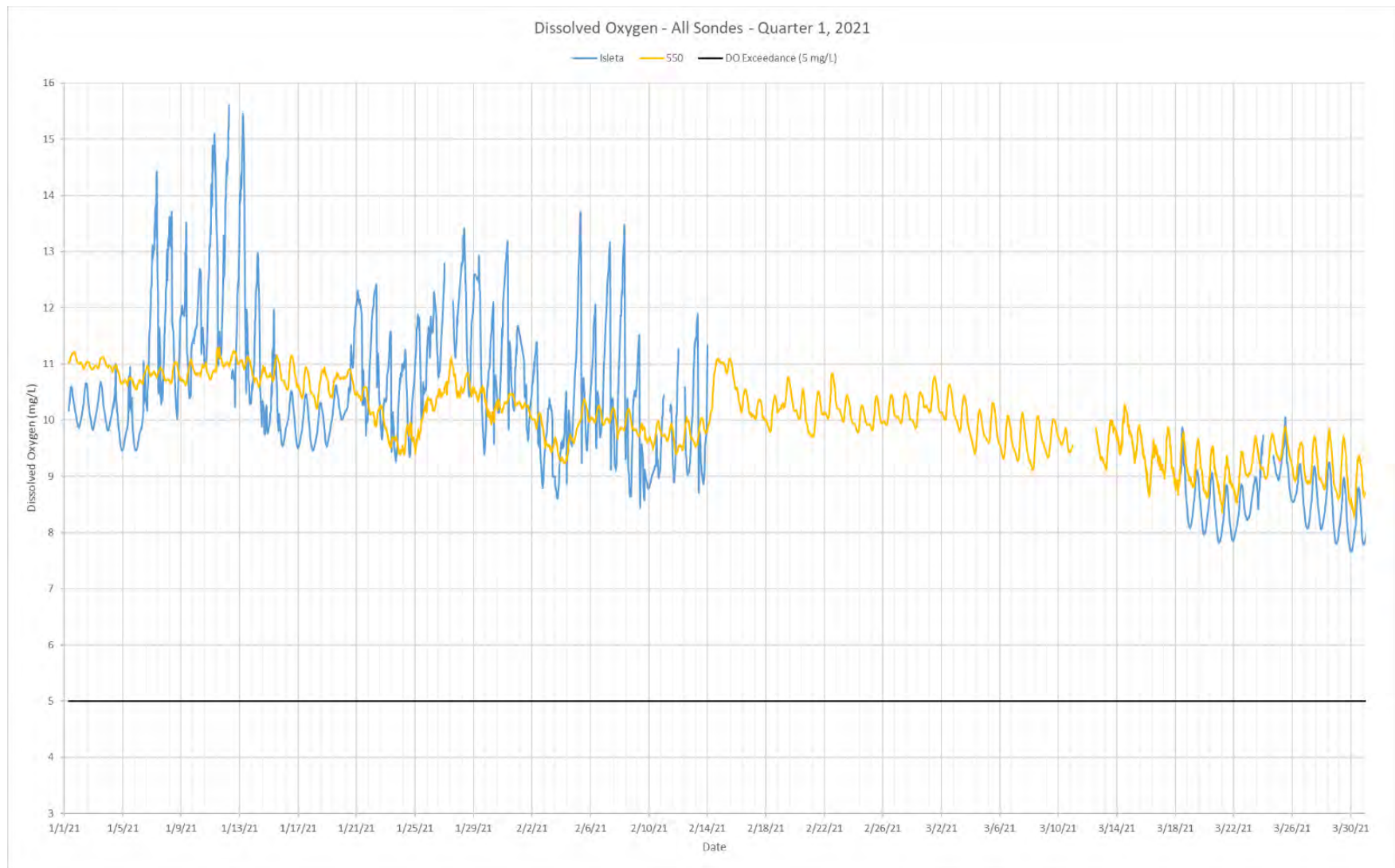
The purpose of AMAFCA's Sonde Monitoring Program is to obtain surface water quality data within the Rio Grande to support AMAFCA and the cooperative MS4 agencies with the assessment of surface water quality parameters, as required by the Endangered Species Act requirements incorporated into the MS4 Permit. In addition, the Sonde Monitoring Program data supports determination of long-term surface water quality trends, related to stormwater impacts and impairments, within the Middle Rio Grande. The sondes monitor temperature, barometric pressure, pH, turbidity, DO, DO saturation (%), and water depth above each sonde. AMAFCA has improved the Sonde Program through the years with current access to real-time online data, allowing quicker response and solutions to maintenance issues.



Photos of AMAFCA Sondes

From the AMAFCA FY 2021 In-Stream Water Quality Monitoring Memos, which report on the AMAFCA sonde data, the DO fell slightly below 5 mg/L related to storm events within the watershed for the following locations:

- US Highway 550 Bridge – three dates in FY 2021, for a total of 14.5 hours (0.17 % of the year) – the DO was in the range of 4.37 – 4.9 mg/L.
- Sandia Pueblo Boundary – one date in FY 2021, for a total of 4 hours (0.05 % of the year) – the DO was in the range of 4.08 – 5 mg/L.
- Isleta Dam – twenty-one dates in FY 2021, for a total of 112 hours (1.3 % of the year) – the DO was in the range of 3.73 – 4.99 mg/L.



Plot of DO Data Collected From Sondes for FY 2021 Quarter 1

CMC and AMAFCA Water Quality Monitoring Program Summary

In addition to the Sonde Program, both AMAFCA and the Middle Rio Grande Compliance Monitoring Cooperative (CMC) collect grab samples within the Rio Grande during storm events. Field data is measured, including DO, for these samples. For MS4 Permit compliance, the Middle Rio Grande CMC has two monitoring points where DO field measurements are collected, north and south of the urbanized portion of the river. The AMAFCA Monitoring Program collects samples in the Rio Grande at the downstream (south) end of the watershed (Rio Grande at Isleta Lakes). The graph above shows the DO data from all AMAFCA and CMC samples collected from July 2016 – June 2021. None of the field DO data collected from these programs have recorded DO in the Rio Grande during stormwater discharge events below the water quality standard of 5 mg/L for the Rio Grande (NMAC 20.6.4).

Dissolved Oxygen (mg/L)

Date

CMC-Rio Grande North

CMC-Rio Grande South

AMAFCA-Rio Grande at Isleta Lakes

NMAC & Pueblo WQS - minimum 5 mg/L

Plot of DO Data Collected from Grab Samples in the Rio Grande Through the AMAFCA and CMC Monitoring Programs

AMAFCA Annual Incidental Take Report Summary

The Annual Incidental Take Report estimates the potential Rio Grande Silvery Minnow (RGSM) harassments and lethality near the North Diversion Channel (NDC) outfall, using the method defined by the USFWS for the Biological Opinion (BO) completed in August 2014. This analysis calculates the frequency (number) of anoxic and hypoxic events and determines if the events meet the measurable goals provided in the December 2014 MS4 Permit No. NMR04A000. It also determines the number of RGSM mortalities and harassments using the BO specified methodology. For the entire MS4 Permit term, including during administrative continuance, zero anoxic events and zero hypoxic events have been identified in the field or during the incidental take analysis (refer to table below).

MRG Watershed MS4 Permit (issued 2014)	Annual Report Year	Measurable Goals Frequency of Anoxic Events/year	Actual No. of Anoxic Events for Year	Measurable Goals Frequency of Hypoxic Events/year	Actual No. of Hypoxic Events for Year
Permit Year 1	July 2015 - June 2016	18	0	36	0
Permit Year 2	July 2016 - June 2017	18	0	36	0
Permit Year 3	July 2017 - June 2018	9	0	18	0
Permit Year 4	July 2018 - June 2019	9	0	18	0
Permit Year 5	July 2019 - June 2020	9	0	18	0
Admin. Continuance	July 2020 - June 2021	9*	0	18*	0

Values in this table are from Table 1.c from MS4 Permit (p. 21 of part 1).

* MS4 Permit expired and is in administrative continuance. The same measurable goals as Permit Year 5 are assumed.

*Table Summarizing the Incidental Take Analysis Compared to the MS4 Permit
Measurable Goals from 2015 – 2020*

AMAFCA follows the procedure for completing the incidental take analysis to ensure the MS4 Permit requirements are met and that this analysis is consistently completed each year. The procedure is part of AMAFCA's Strategy and Procedures notebook. For this entire MS4 Permit term, FY 2016 to FY 2021, none of the NDC qualifying events were found to be hypoxic or anoxic. The oxygen percent saturation, for all data collected for the NDC qualifying events, was greater than 54.3%.

Incidental Take Statement for NDC Discharges to the Rio Grande FY 2021 (July 1, 2020 to June 30, 2021)

NDC Qualifying Storm Event (>250 cfs and/or V > 13 af)			Q _P NDC Actual 08329900	Q _P NDC Rounded (Per BO App. A)	DO _{NDC} (Sandia Pueblo Sonde) (mg/L)	DO Saturation _{NDC} (Sandia Pueblo Sonde) (%)	Barometric Pressure _{NDC} (Sandia Pueblo Sonde or Barologger) ^{2,3} (mm Hg)	Temp _{NDC} (Sandia Pueblo Sonde or nearest sonde) (°C)	DO _{Rio Grande} Rio Grande at Central (mg/L)	DO Saturation _{Rio Grande} (%)	Q _{Daily} Rio Grande Actual 08330000	Q _{Daily} Rio Grande Rounded (Per BO Table 1)	No. of RGSM Killed in Lethal Zone DO % Sat < 8.7%, DO <0.7 mg/L	No. of RGSM Harassed in Impact Area 8.7 %< % DO Sat < 54.3 %, 0.7<DO<4.4 mg/L	Was Event Anoxic? Enter '1' if Yes, '0' if No (% Sat <= 8.7%; 50% lethality)	Was Event Hypoxic? Enter '1' if Yes, '0' if No (8.7% > % Sat <= 54.3%)
Date	Time	Season (Per BO Table 1)														
7/25/2020	20:30	Summer	2,353	2,500	6.7 ^{1,3,4}	no data	633.3	26.19	no data	no data	347	500	Calc. DO OK	Calc. DO OK	Calc. DO OK	Calc. DO OK
11/8/2020	5:30	Fall	172	0	8.8 ^{1,3,4}	87 ¹	633	12.88	no data	no data	320	500	Calc. DO Sat. OK	Calc. DO Sat. OK	Calc. DO Sat. OK	Calc. DO Sat. OK
4/28/2021	17:50	Spring	935	1,000	8.3 ^{1,3,4}	98.1 ¹	631.5	15.5	no data	no data	770	1,000	Calc. DO Sat. OK	Calc. DO Sat. OK	Calc. DO Sat. OK	Calc. DO Sat. OK
5/3/2021	18:10	Spring	1,000	1,000	7.7 ^{1,3,4}	97.2 ¹	628.3	18.4	no data	no data	888	1,000	Calc. DO Sat. OK	Calc. DO Sat. OK	Calc. DO Sat. OK	Calc. DO Sat. OK
5/31/2021	15:50	Spring	2,140	2,000	7.7	100 ¹	633.0	18.6	7.7	no data	1090	1,000	N/A	N/A	0	0
6/4/2021	00:10	Spring	941	1,000	7.6	102.7 ¹	633.3	20.9	no data	no data	1110	1,000	N/A	N/A	0	0
												Total #s / Events:	0	0	0	0

NOTE: No. of RGSM Killed or Harassed (Columns O and P) is based on lookup tables from BO Appendix A. From BO, p. 72, if stormwater discharges containing less than 0.7 mg/L DO occur during the period of May 15 to 31, then up to 300 larval silvery minnow per year may also die. This did not occur from July 2019 to June 2020.

¹ Sandia Pueblo Sonde did not report DO values on these dates. Procedures specified to calculate value using DO concentration from the Rio Grande at Central Sonde and temperature and pressure from the Sandia Sonde could not be applied because no temperature data for Rio Grande was available. Used temperature from the Isleta Sonde (<https://water.usgs.gov/software/DOTABLES/>). Daily mean temperature data not available from USGS for "08329918 - Alameda Bridge", "08330000 - Central", "08330830 - Valle de Oro", or "08330871 - Isleta Lakes".

² Internet converter used for barometric pressure calculation (psi>mmHG): <http://www.convertunits.com/from/mm+Hg/to/psi>

³ The barometric pressure was not recorded by the Sandia Pueblo Sonde for these dates. The corresponding AMAFCA barologger data was used instead.

⁴ Sandia Pueblo Sonde or Rio Grande Central Sonde did not report DO values on these dates/times. Procedures specified to calculate value using DO concentration & temperature from nearest Sonde and temperature and pressure from the AMAFCA barologger (<https://water.usgs.gov/software/DOTABLES/>).

Green Shading	No Incidental Take according to BO; DO in NDC Outfall > 4.4 mg/L and oxygen saturation of 54.3 %
Gray Shading (Sonde Data not available), Incidental Take based on calculated DO concentration or DO saturation (Source: Sonde Data and Program memos from Weston)	July 2020 - The Sandia Pueblo Boundary sonde stopped transmitting on July 22, 2020.
	The Sandia Pueblo Boundary Sonde stopped transmitting data on July 22, 2020 (Quarter 3) at 13:00. Data was not collected at this location during Quarter 4 (October - Dec. 2020) due to data transmission issues.
	From 4/1/2021 through 5/25/2021 - gap in data for Sandia Sonde reported in Q2 memo from Weston.
Dark Green Shading	NDC (Sandia Pueblo) Sonde did not report DO concentration, calculated using http://water.usgs.gov/software/DOTABLES/
Blue Shading	NDC (Sandia Pueblo) Sonde did not report percent saturation, calculated using http://water.usgs.gov/software/DOTABLES/

No. Events w/ Takes for Year:		0	
Estimated Incidental Take			
July 2020 to June 2021		Allowed Per Year	Allowed Over 5-Year Permit Term
Mortalities =	0	2,280	10,410
Harassments =	0	32,616	163,080

Incidental Take Allowance Source: Biological Opinion for U.S. Environmental Protection Agency General NPDES Permit No. NMR04A000, Aug. 2014, USFWS



**Summary of AMAFCA's MS4
Temperature Program
FY 2021 (July 1, 2020 – June 30, 2021)**

NPDES Permit No. NMR04A000

Part I.C.1.f - Special Conditions, Compliance with Water Quality Standards

AMAFCA monitors and evaluates the potential effect of stormwater discharges related to temperature in the Rio Grande. AMAFCA and the original Municipal Separate Storm Sewer System (MS4) co-permittees (the City of Albuquerque, New Mexico Department of Transportation, and the University of New Mexico) assembled and analyzed temperature data from 1982 to 2012. This data analysis proved the assertion that the receiving waters of the Rio Grande are not adversely affected by the temperature of stormwater from the Albuquerque MS4. This data was presented in an initial report that was submitted to EPA on May 1, 2012.

Since 2012, the MS4 permittees have continued to collect and submit temperature data, with each Annual Report, showing that the Rio Grande (receiving water for the Middle Rio Grande watershed) is not adversely affected by the temperature of stormwater from the Albuquerque MS4. AMAFCA has collected data from 2012 to 2021 using tidbit probes and sondes. The temperature monitoring results have not shown temperature exceedances related to stormwater discharges at any of the monitoring locations in the watershed or in the river. In accordance with AMAFCA's Stormwater Management Program (SWMP), AMAFCA has and will continue to assess the potential effect of stormwater discharges into the Rio Grande by collecting and evaluating additional temperature data.

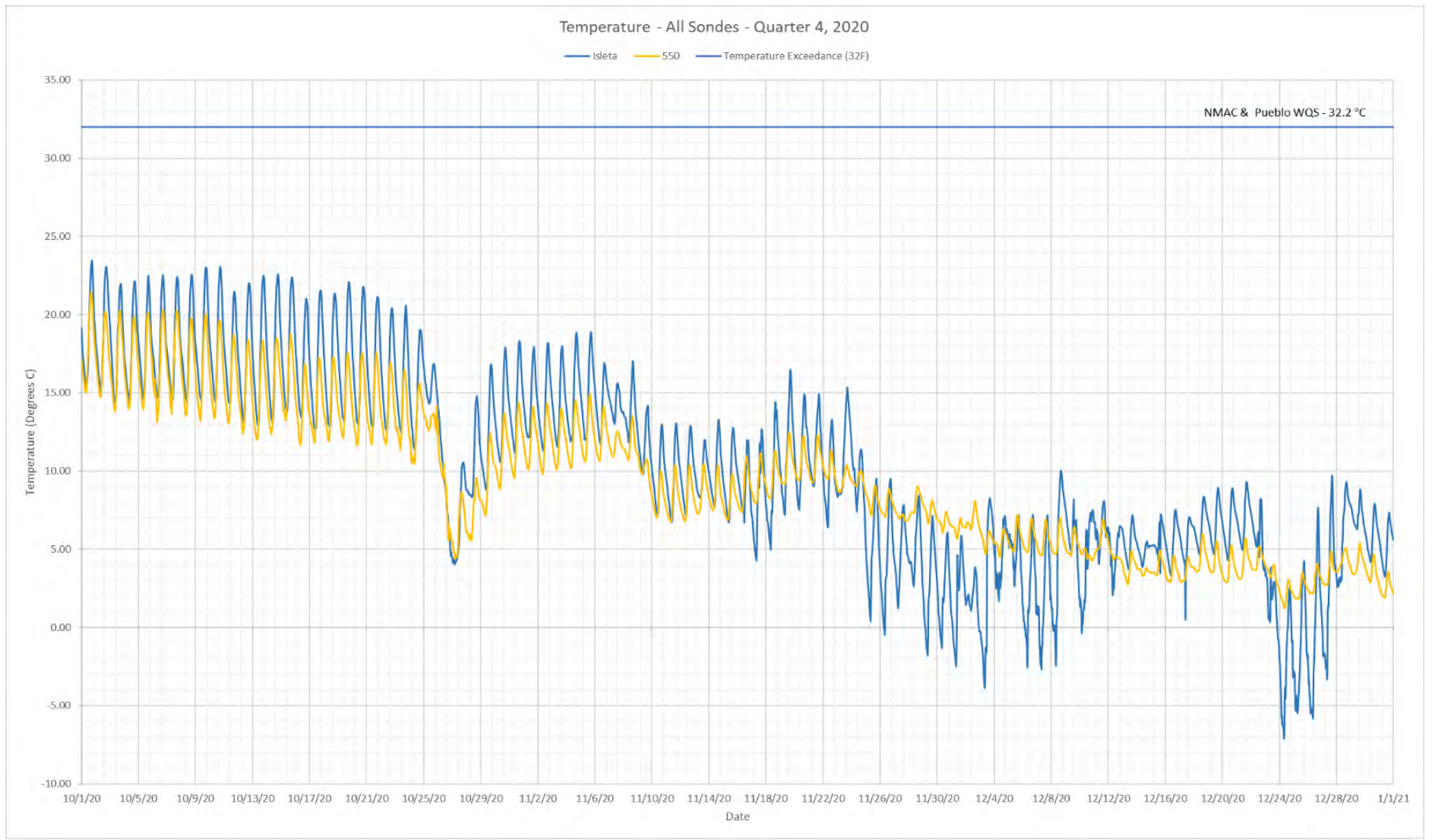
AMAFCA MS4 Sonde Program Summary

The purpose of AMAFCA's Sonde Monitoring Program is to obtain surface water quality data within the Rio Grande to support AMAFCA and the cooperative MS4 agencies with the assessment of surface water quality parameters, as required by the Endangered Species Act requirements incorporated into the MS4 Permit. In addition, the sonde monitoring program data supports determination of long-term surface water quality trends, related to stormwater impacts and impairments, within the Middle Rio Grande. The sondes monitor temperature, barometric pressure, pH, turbidity, dissolved oxygen (DO), DO saturation (%), and water depth above each sonde. AMAFCA has improved the Sonde Program through the years with current access to real-time on-line data, allowing quicker response and solutions to maintenance issues.

From the AMAFCA FY 2021 In-Stream Water Quality Monitoring Memos, which report on the AMAFCA sonde data, the temperature was below the water quality standard 32.2°C, which is the maximum temperature water quality standard for Marginal Warmwater Aquatic for the Rio Grande (NMAC 20.6.4) for all four sondes, for all data related to storm events within the watershed. This is consistent with the sonde data collected and reported in prior fiscal years.



Photos of AMAFCA Sondes



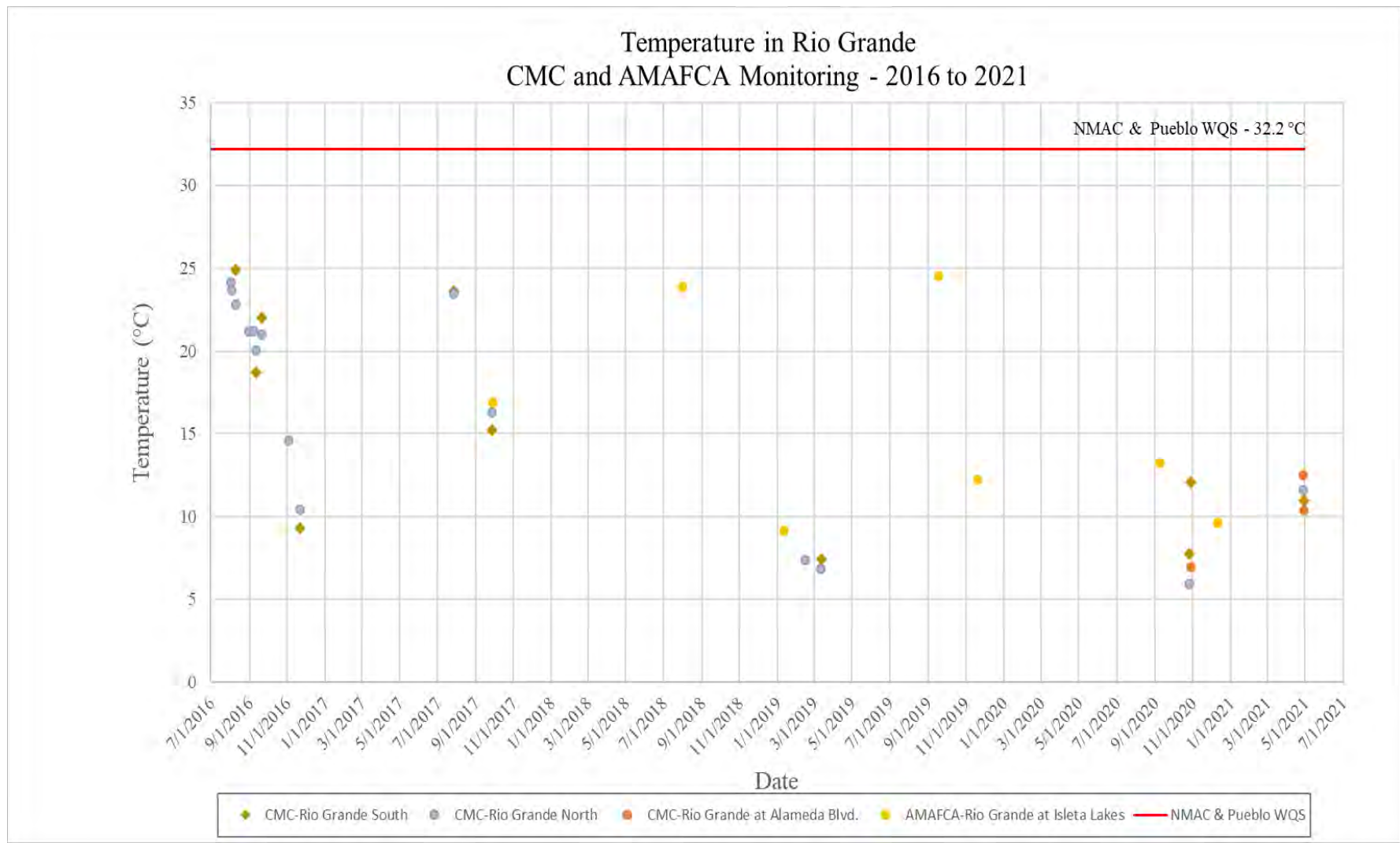
Plot of Temperature Data Collected From Sondes for FY 2021 Quarter 4

CMC and AMAFCA Water Quality Monitoring Program Summary

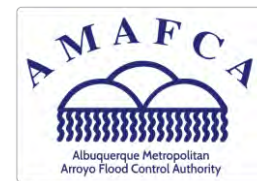
In addition to the Sonde Program, both AMAFCA and the Middle Rio Grande Compliance Monitoring Cooperative (CMC) collect grab samples within the Rio Grande during storm events. Field data is measured, including temperature, for these samples. For MS4 Permit compliance, the Middle Rio Grande CMC has three monitoring points, north and south of the urbanized portion of the river, as well as at the Alameda Bridge. The AMAFCA Monitoring Program collects samples in the Rio Grande at the downstream (south) end of the watershed (Rio Grande at Isleta Lakes). The graph above shows the temperature data from all AMAFCA and CMC samples collected from July 2016 – June 2021. None of the field temperature data collected from these programs have recorded temperature in the Rio Grande during stormwater discharge events above the water quality standard of 32.2°C.



Collecting a CMC sample from the Rio Grande at Angostura Diversion at the upstream (north) end of the Middle Rio Grande Watershed



Plot of Temperature Data Collected From Grab Samples in the Rio Grande Through the AMAFCA and CMC Monitoring Programs



**Summary of AMAFCA's MS4
Discharges to Water Quality Impaired Water Bodies
with an Approved TMDL Program
FY 2021 (July 1, 2020 – June 30, 2021)**

NPDES Permit No. NMR04A000

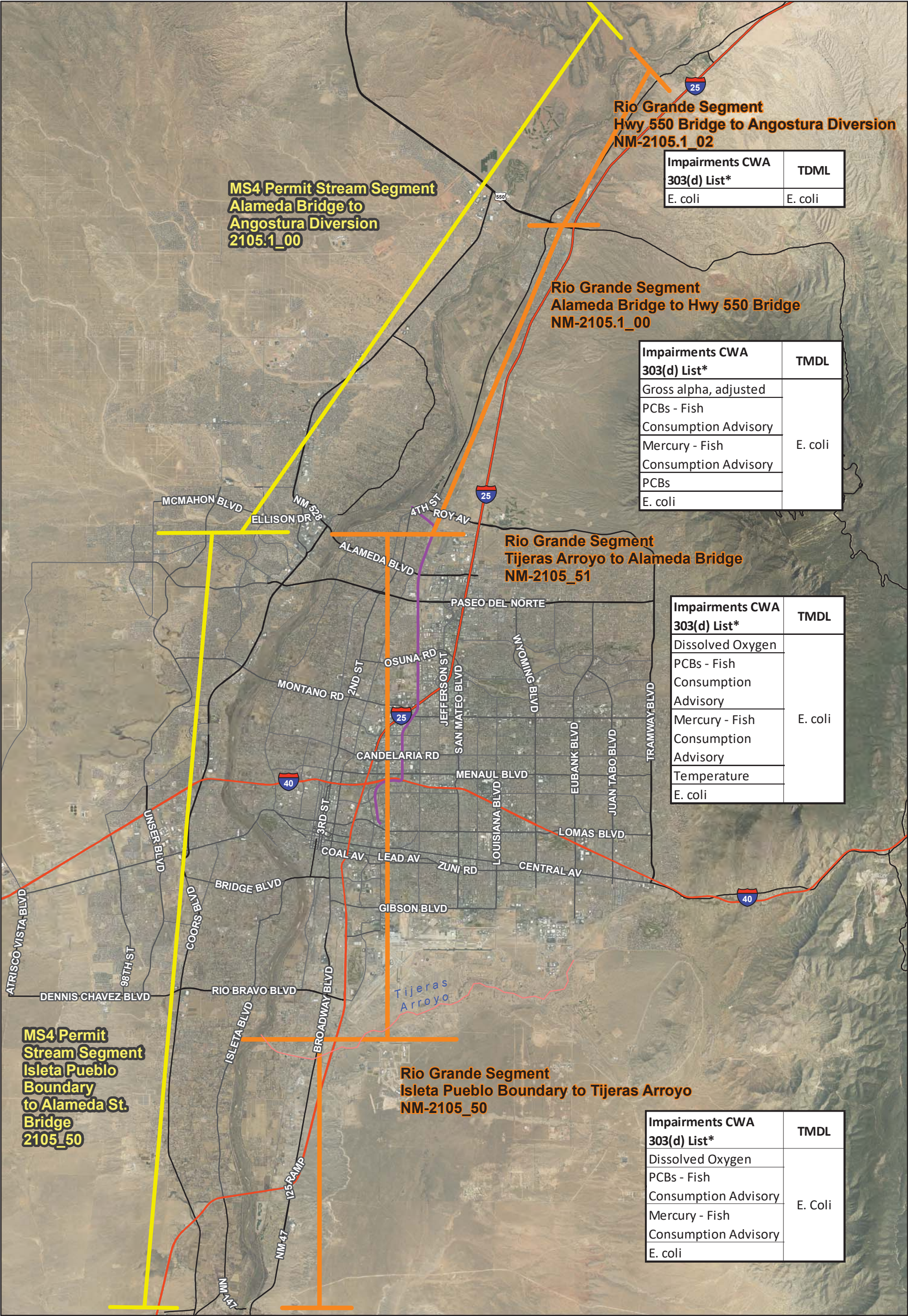
Part I.C.2.b.(i) - Special Conditions, Compliance with Water Quality Standards

Total Maximum Daily Load (TMDL) – E. coli

A Total Maximum Daily Load (TMDL) is essentially the regulatory calculation of the maximum amount of a particular pollutant allowed to enter a water body (like the Rio Grande) so that the water body will continue to meet water quality standards for that particular pollutant. A TMDL can also determine a pollutant reduction target and allocates load reductions necessary to the source(s) of the pollutant.

The only TMDL in the Middle Rio Grande is *Escherichia coli* (*E. coli*). AMAFCA's required compliance for wet weather stormwater discharges with the Environmental Protection Agency's (EPA) calculated TMDL for *E. coli* is documented in the Clean Water Act (CWA) 303(d)/305(b) Integrated Report (IR). The IR is updated every three years by a review process that is conducted by the New Mexico Environment Department (NMED). For AMAFCA and other Municipal Separate Storm Sewer System (MS4) permittees in the watershed, compliance sampling is done in the Rio Grande at upstream and downstream locations of the urbanized area to determine the collective *E. coli* load added to the river in response to a given storm's runoff to the water body.

AMAFCA and other MS4s covered under the MS4 Permit are required to comply with water quality standards that are comprised of designated uses for surface waters of the state, associated water quality criteria necessary to protect these uses, and an antidegradation policy. Designated uses in the Middle Rio Grande include aquatic life, fish culture, primary and secondary contact (including cultural, religious, or ceremonial purposes), public water supply, industrial water supply, domestic water supply, irrigation, livestock watering, and wildlife habitat. AMAFCA's stormwater discharges protect these uses and fulfill the requirements set forth in the MS4 Permit. Coordinated water quality sample collection programs through AMAFCA, the Stormwater Quality Team, Compliance Monitoring Cooperative (CMC), and Bosque Ecosystem Monitoring Program (BEMP) have been developed and annually funded to monitor, assess, protect, and restore surface water quality to the Middle Rio Grande watershed.



www.bhinc.com 800.877.5332

Legend

- MS4 Permit Stream Segments
- NMED Stream Segments
- North Diversion Channel
- Rio Grande
- Interstate Highway
- U.S. Highway
- State Highway

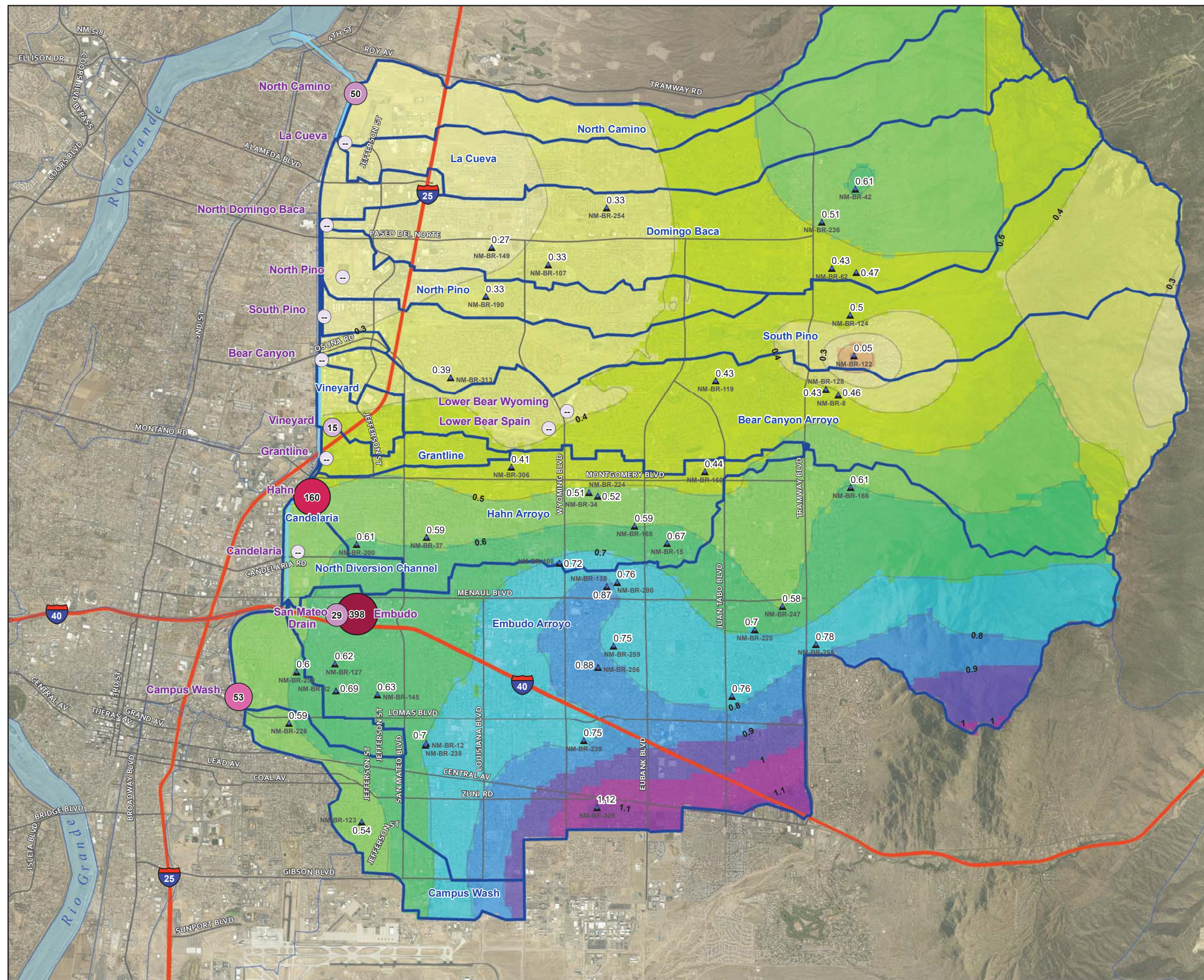
* Final 2020-2022 State of NM Clean Water Act Section 303(d)/Section 305(b) Integrated Report

CMC Monitoring

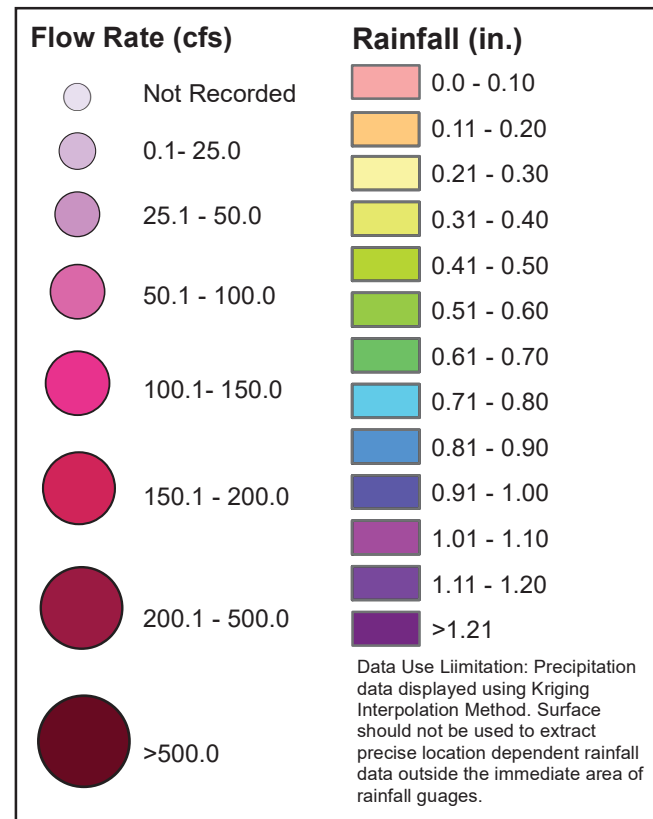
Figure 6
Rio Grande Impairments & TMDL Information

AMAFCA Flow Monitoring Program

AMAFCA's flow monitoring program monitors stormwater runoff in ten (10) arroyos contributing runoff to the North Diversion Channel (NDC) and eventually into the Rio Grande. This program supports AMAFCA's Municipal Separate Storm Sewer System (MS4) Discharges to Water Quality Impaired Water Bodies with an Approved TMDL Program to assess stormwater runoff from specific locations, assisting with an understanding on contributing pollutant loads, including E. coli, to the North Diversion Channel and Rio Grande. The graphics below provide examples of the program flow analysis compared to the rainfall received in each subwatershed.



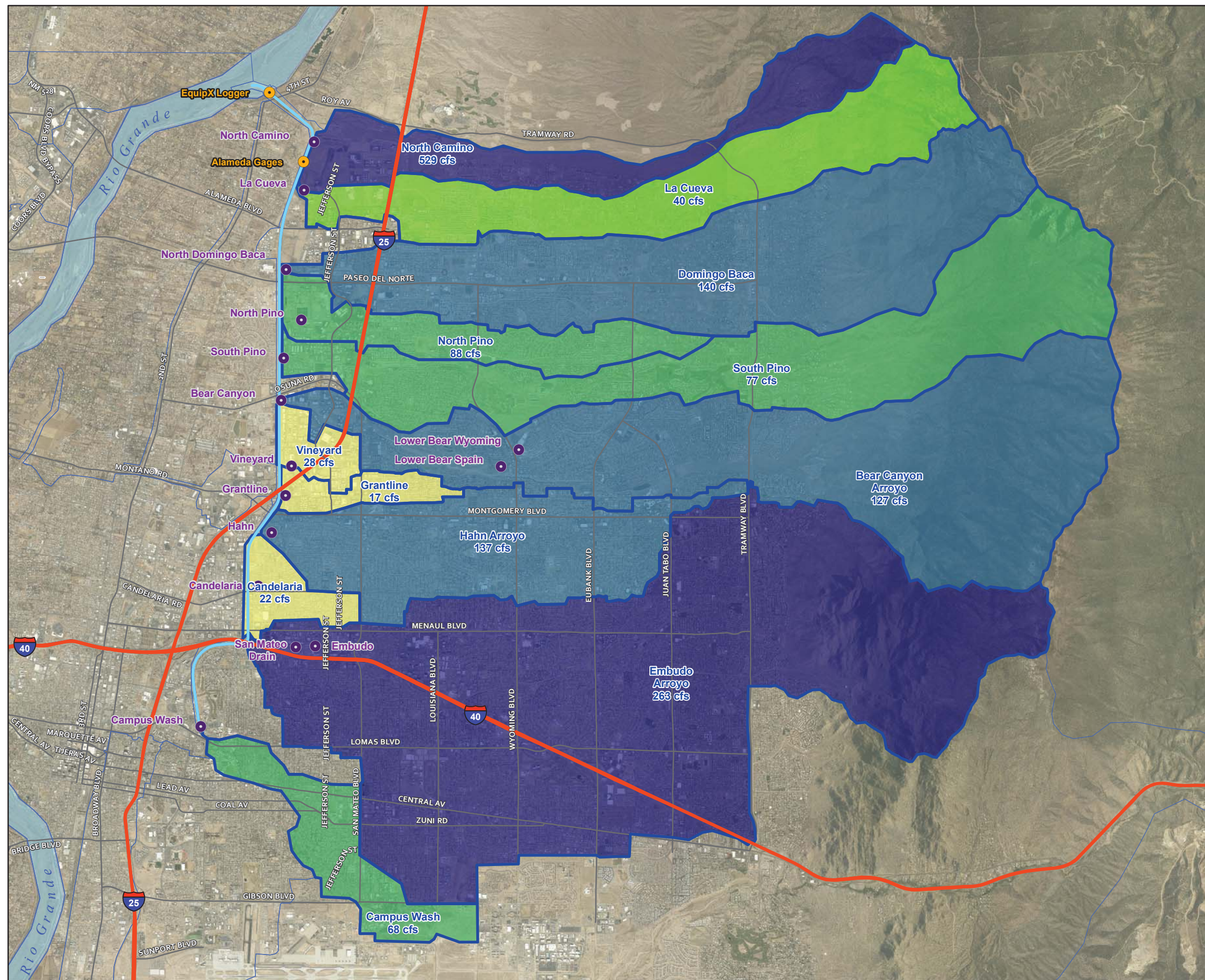
- ▲ CoCoRaHS Stations with reported rainfall (in)
- North Diversion Channel
- Watersheds



Ave. CoCoRaHS Rainfall
for NDC Watershed:
0.58 Inches

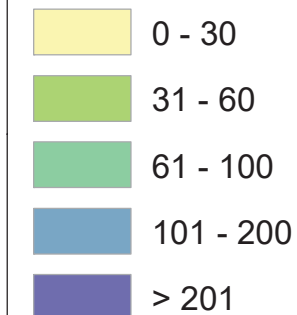
AMAFCA Water Levellogger Runoff and CoCoRaHS Rainfall April 28, 2021 Storm Event





- Levellogger Sites
- NDC Levellogger Sites
- North Diversion Channel
- ⬭ Watersheds

Average Peak Runoff (cfs)



Average Peak Discharge (cfs)

*Measured by Levelloggers
per Watershed
Over 56 Months
(October 2016 - June 2021)*



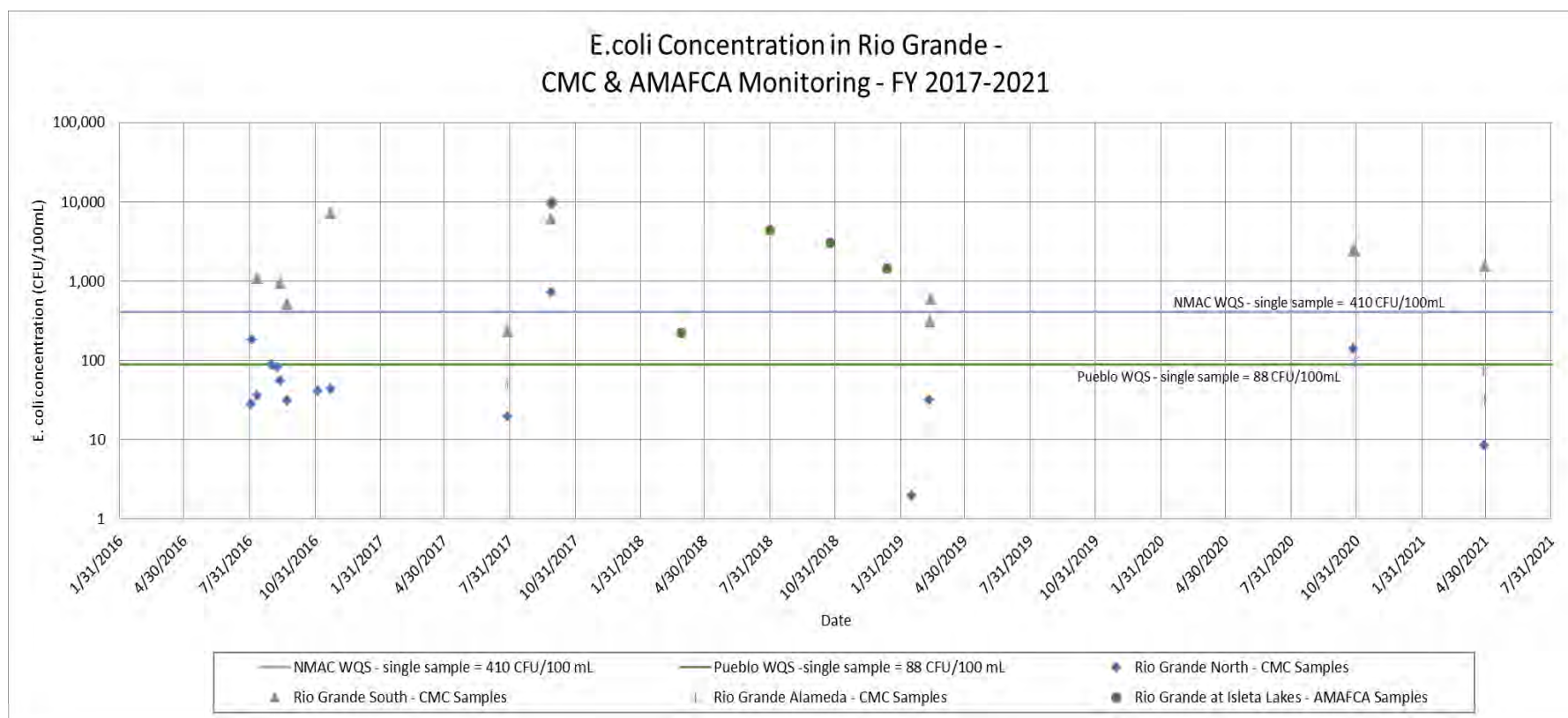
0 6,000 12,000 Feet



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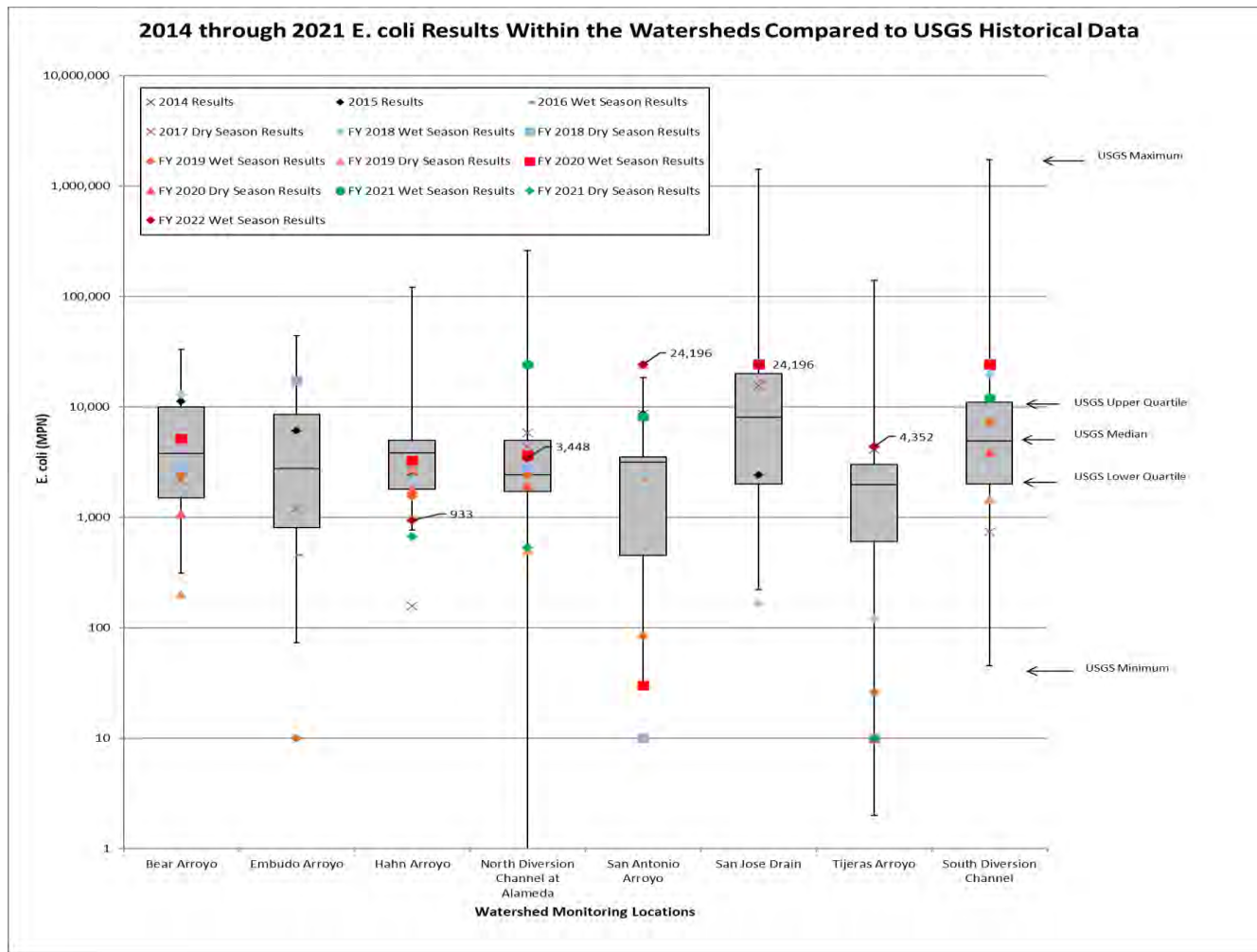
CMC and AMAFCA Water Quality Monitoring Program

Both AMAFCA and the Middle Rio Grande Compliance Monitoring Cooperative (CMC) collect grab samples within the Rio Grande during storm events. E.coli is tested for these in-stream samples. For MS4 Permit compliance, the Middle Rio Grande CMC has three monitoring points, north and south of the urbanized portion of the river, as well at the Alameda Bridge. The AMAFCA monitoring program collects samples in the Rio Grande at the downstream (south) end of the watershed (Rio Grande at Isleta Lakes). The graph below shows the E.coli data from all AMAFCA and CMC samples collected from July 2016 – June 2021.



Plot of E. coli Results from Grab Samples in the Rio Grande Through the AMAFCA and CMC Monitoring Programs

The AMAFCA monitoring program also collects and analyzes stormwater runoff from monitoring sites within the watershed, before it reaches the Rio Grande. The results from 2014 – 2021 are shown below compared to USGS historical results (maximum, minimum, median and upper and lower quartile).

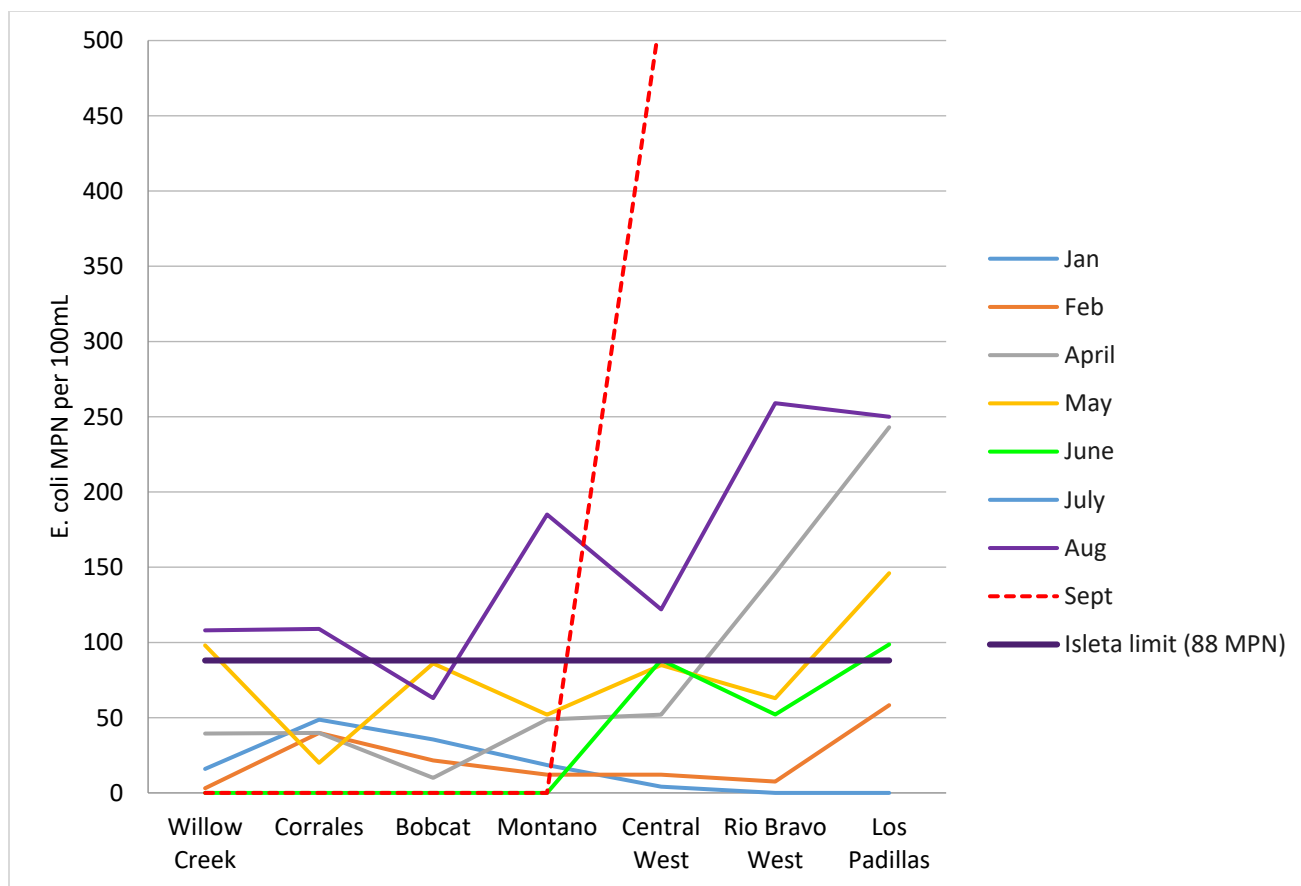


*AMAFCA Monitoring Program E. coli Results Within the Watershed (Not Including Samples in the Rio Grande)
Compared to Historical USGS E. coli Data*

Bosque Ecosystem Monitoring Program (BEMP)

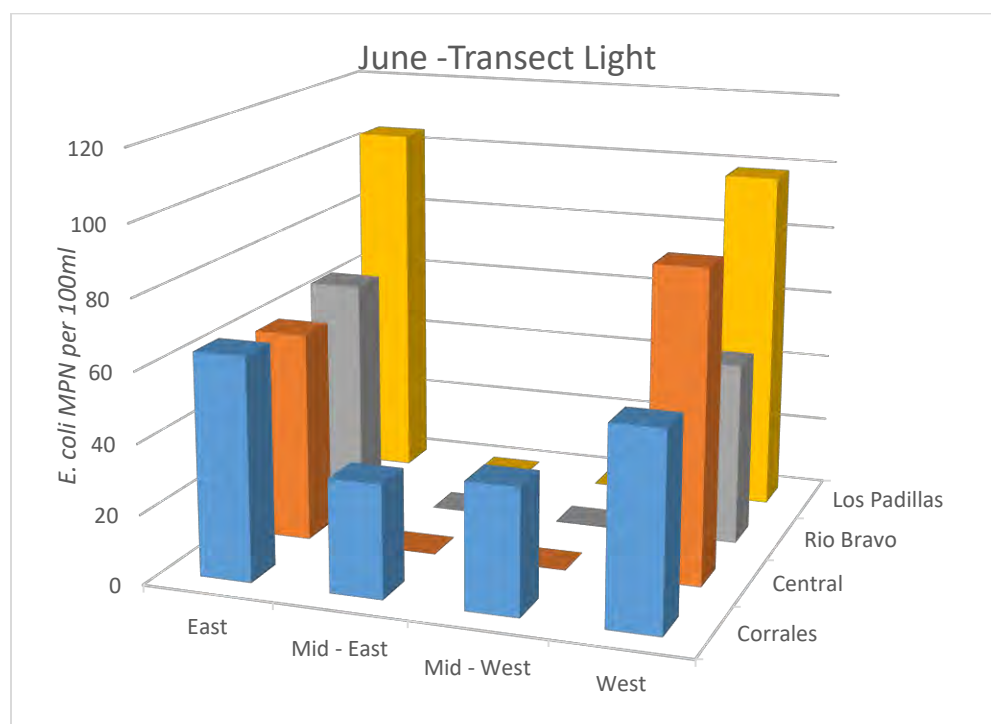
The Bosque Ecosystem Monitoring Program (BEMP) combines long-term ecological research with community outreach by involving K-12 students and their teachers, as well as university students, in monitoring key indicators of structural and functional change in the Middle Rio Grande riparian forest, or “bosque”. BEMP averages approximately 9,000 participants annually. The students’ experiences support science education reform efforts and help to increase understanding and appreciation of the Rio Grande riparian ecosystem. Students also learn proper monitoring protocols, riparian ecology, and how to use data to answer questions through hands-on science. BEMP findings derived from student-gathered data are used by government agencies to inform multi-million dollar river and riparian management decisions.

The BEMP sampling supports the collection and analysis of *E. coli* data in the Rio Grande. The 2021 BEMP water quality collection consists of North (upstream) to South (downstream) longitudinal sampling along the West bank of the Rio Grande, interrupted quarterly starting in March, by transect light collections at four sample locations. Transect light samples are taken at both the East and West banks (and middle-east, middle-west at the northernmost site). Storm sampling also occurred during monsoon season (July - October) above the North Diversion Channel, Below the North Diversion Channel, and directly in the channel during qualifying storm events.



BEMP E. coli Data from January - September 2021. The Plot has the Upstream Site (Willow Creek) on the Left and Downstream Site on the Right (Los Padillas).

Below is a graph showing the June 2021 transect light protocol created to better visualize the E. coli readings both longitudinally and from bank to bank for the transect light collections.



*BEMP E. coli Data, June 2021, Transect Across the Rio Grande at Four Locations.
The Plot has the Upstream Site on the Front (Corrales) and
Downstream Site on the Back (Los Padillas).*

The previous sections focus on the monitoring and data collection related to understanding E. coli within the Rio Grande and contributions from the watershed. Non-point source load reduction actions, like those taken by AMAFCA, the Mid Rio Grande Storm Water Quality Team (MRGSQT), and others, are implemented through a wide variety of programs at the state, local and federal level. AMAFCA is a member of the MRGSQT, which has grown to 12 organizations, who leverage their resources to ensure MS4 Permit public education and outreach requirements are met with the goal of preventing and reducing stormwater pollution throughout the watershed from reaching the Rio Grande. These programs may be regulatory, non-regulatory, or incentive-based like a cost-share program. In addition, waterbody restoration can be assisted by voluntary actions on the part of citizen and/or environmental groups. Public education, outreach, involvement, and participation efforts have also been undertaken at the watershed level in the Middle Rio Grande to address the reduction of non-point source loads for the bacterial TMDL (E. coli) and various impairments on New Mexico's 303(d) list. Examples of AMAFCA and watershed MS4s programs to increase public awareness with the goal of reducing E. coli within the watershed are provided in the images below. Additional information is available at www.keeptheriogrand.org.



Mid Rio Grande Stormwater Quality team - Scoop the Poop & There is No Poop Fairy Public Education Campaigns Help Support Reducing Pet Waste Sources of E. coli in the Watershed



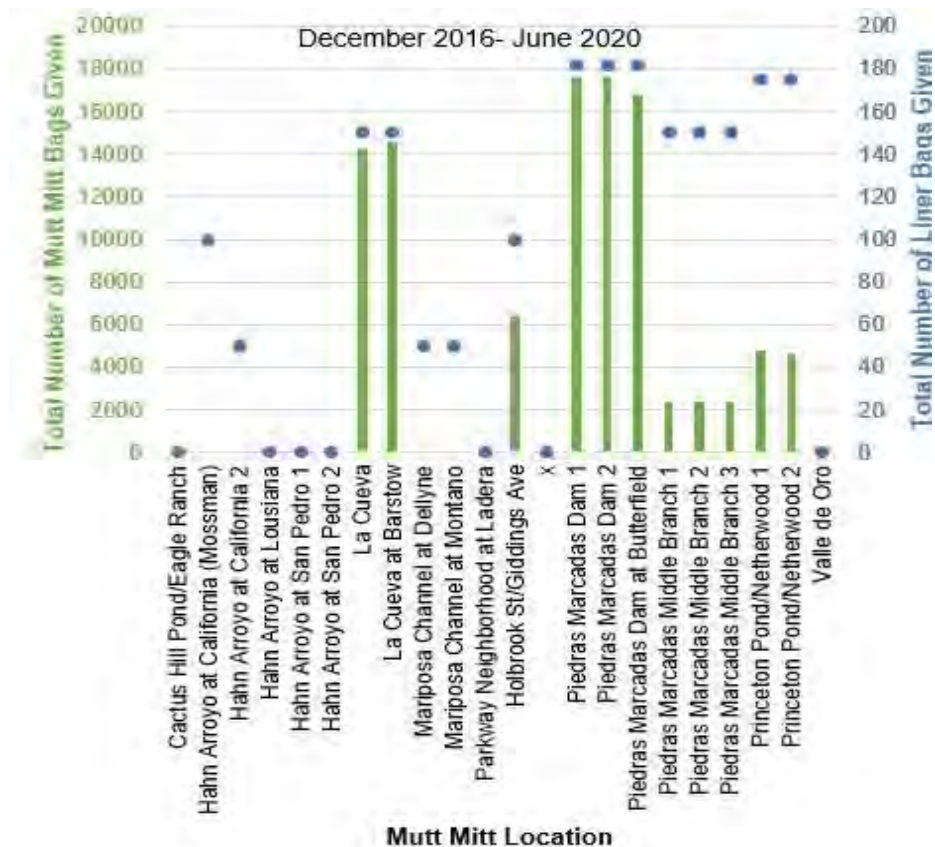
AMAFCA Participating in the New Mexico State Fair Parade – Sharing the Public Education Campaign to Reduce Pet Waste Sources of E. coli in the Watershed

'There is no poop fairy': Albuquerque residents asked to pick up after their dog

WATCH: Full interview with Patrick Chavez, Stormwater Engineer

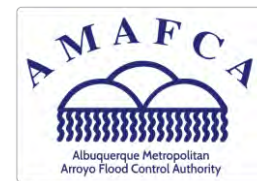


An Interview with the AMAFCA Stormwater Quality Engineer to Educate the Public:
<https://www.krqe.com/news/albuquerque-metro/there-is-no-poop-fairy-albuquerque-residents-asked-to-pick-up-after-their-dog/>



Total # of Mutt Mitt Bags Given:	103,701
Total # of Liner Bags Given:	1,996
# of Mutt Mitt Bags Given During FY 2019:	44,000
# of Liner Bags Given During FY 2019:	1,450
Estimated Pounds of Dog Waste:	22,814

Summary of the AMAFCA Mutt Mitt Stations Available Throughout the Watershed to Promote Pet Waste Collection and Proper Disposal



**Summary of AMAFCA's MS4
Discharges to Water Quality Impaired Water Bodies
without an Approved TMDL Program
FY 2021 (July 1, 2020 – June 30, 2021)**

NPDES Permit No. NMR04A000

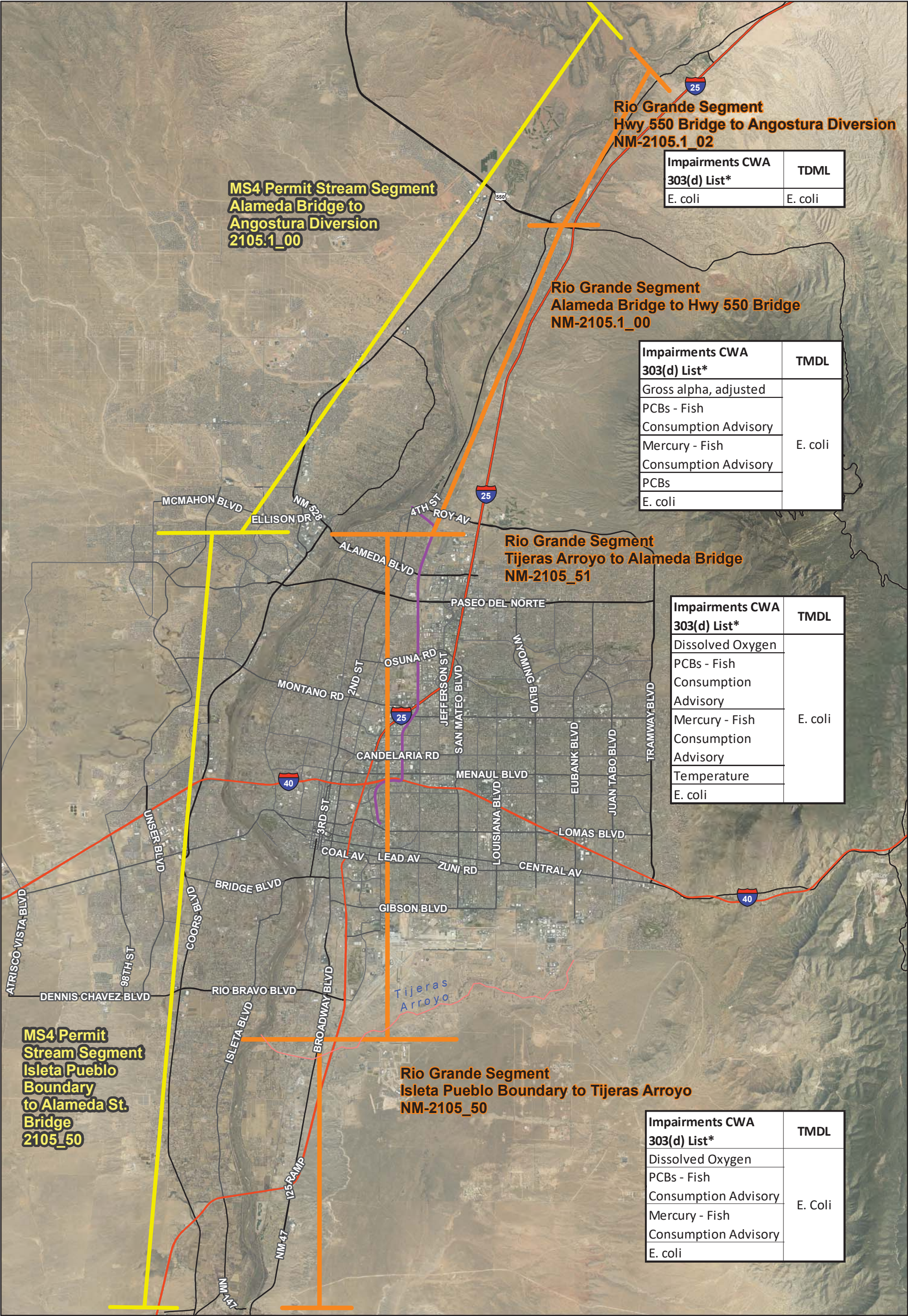
Part I.C.2.b.(ii) - Special Conditions, Compliance with Water Quality Standards

Impairments without Approved TMDLs

Impairments for the Rio Grande are documented in the Clean Water Act (CWA) 303(d)/305(b) Integrated Report (IR). The IR is updated every three years by a review process that is conducted by the New Mexico Environment Department (NMED). For AMAFCA and other Municipal Separate Storm Sewer System (MS4) permittees in the watershed, compliance sampling is done in the Rio Grande at upstream and downstream locations of the urbanized area for impairment parameters, as well as other parameters identified in the MS4 Permit.

AMAFCA and other MS4s covered under the MS4 Permit are required to comply with water quality standards that are comprised of designated uses for surface waters of the state, associated water quality criteria necessary to protect these uses, and an antidegradation policy. Designated uses in the Middle Rio Grande include aquatic life, fish culture, primary and secondary contact (including cultural, religious, or ceremonial purposes), public water supply, industrial water supply, domestic water supply, irrigation, livestock watering, and wildlife habitat. Impairments are identified when sampling results show that the water quality is not meeting the designated uses requirements. Once an impairment is identified; a Total Maximum Daily Load (TMDL) may be considered in the future if continued monitoring does not show improvement. AMAFCA's stormwater discharges protect these uses and fulfill the requirements set forth in the MS4 Permit. Coordinated water quality sample collection programs through AMAFCA, the Stormwater Quality Team, Compliance Monitoring Cooperative (CMC), and Bosque Ecosystem Monitoring Program (BEMP) have been developed and are annually funded to monitor, assess, protect, and restore surface water quality to the Middle Rio Grande watershed.

The current impairments for the Rio Grande stream segments are shown in the figure below.



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Legend

- MS4 Permit Stream Segments
- NMED Stream Segments
- North Diversion Channel
- Rio Grande
- Interstate Highway
- U.S. Highway
- State Highway

* Final 2020-2022 State of NM Clean Water Act Section 303(d)/Section 305(b) Integrated Report

CMC Monitoring

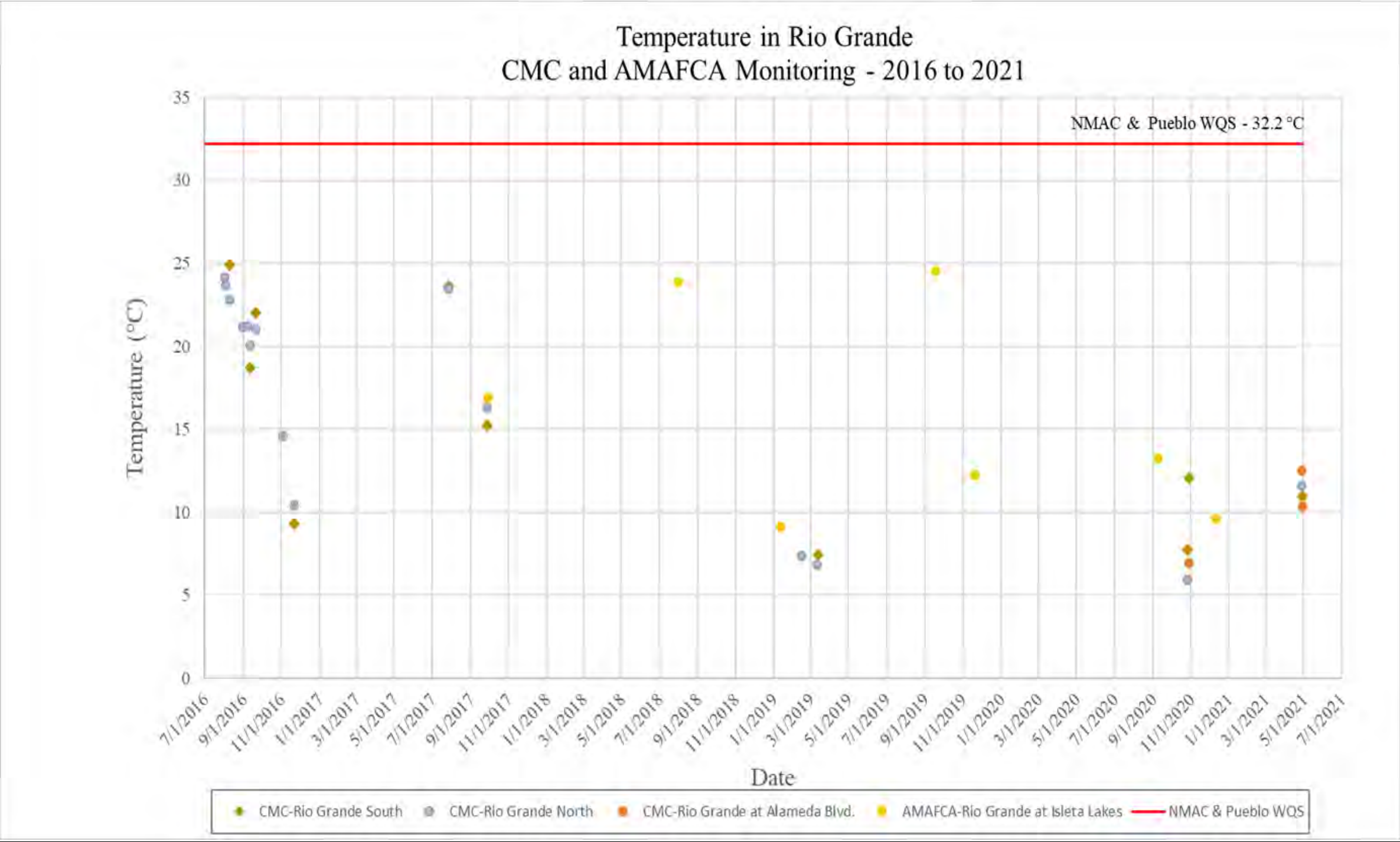
Figure 6
Rio Grande Impairments & TMDL Information

CMC and AMAFCA Water Quality Monitoring Program

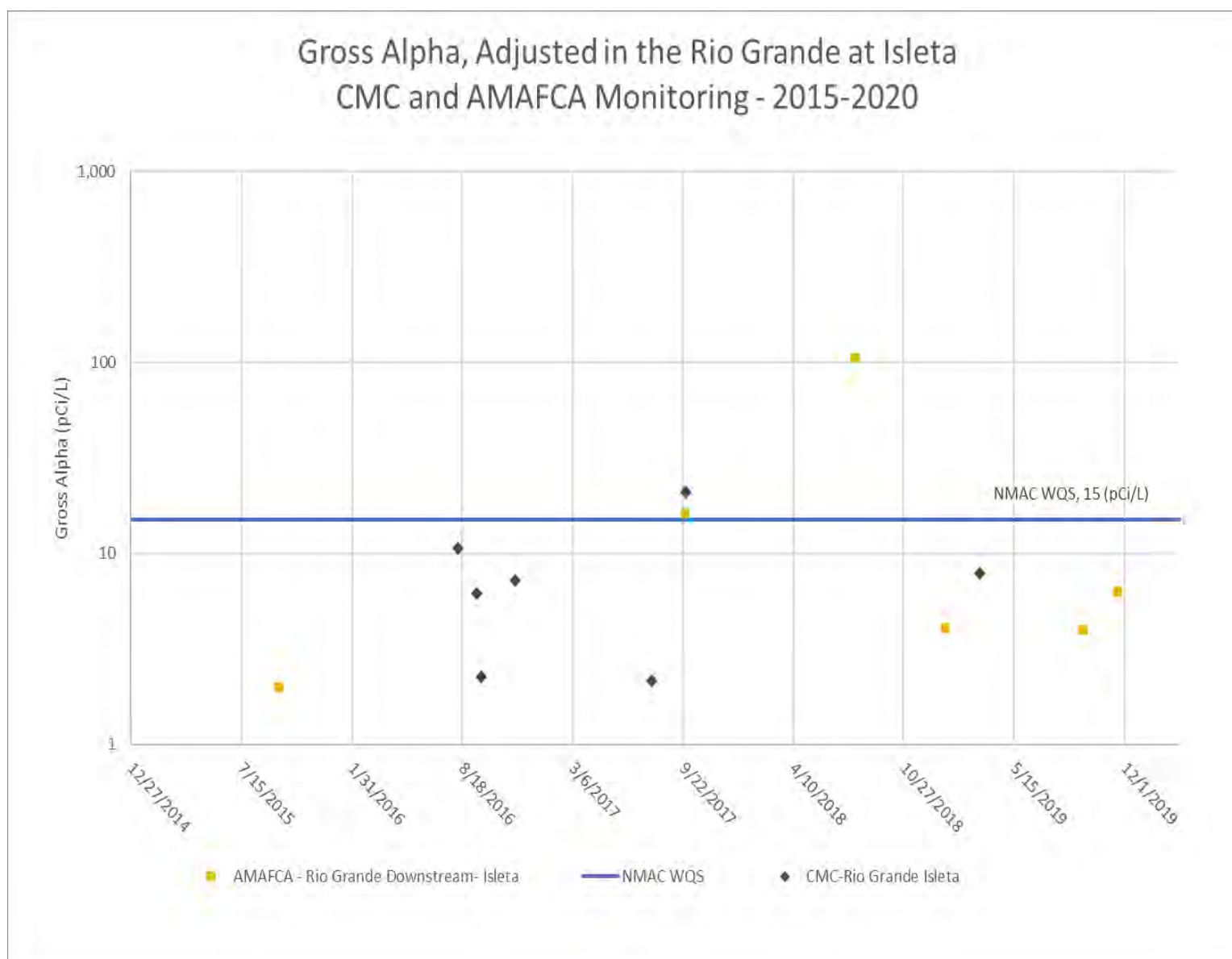
Both AMAFCA and the Middle Rio Grande Compliance Monitoring Cooperative (CMC) collect grab samples within the Rio Grande during storm events. Parameters, including the identified impaired parameters, are tested for these in-stream samples. For MS4 Permit compliance, the Middle Rio Grande CMC has monitoring points north and south of the urbanized portion of the river. The AMAFCA monitoring program collects samples in the Rio Grande at the downstream (south) end of the watershed (Rio Grande at Isleta Lakes). The graphs below show the Temperature and Gross Alpha from AMAFCA and CMC samples collected from 2016 – 2021.

AMAFCA monitors and evaluates the potential effect of stormwater discharges related to temperature in the Rio Grande. AMAFCA and the original MS4 co-permittees (the City of Albuquerque, New Mexico Department of Transportation, and the University of New Mexico) assembled and analyzed temperature data from 1982 to 2012. This data analysis proved the assertion that the receiving waters of the Rio Grande are not adversely affected by the temperature of stormwater from the Albuquerque MS4. This data was presented in an initial report that was submitted to EPA on May 1, 2012.

Since 2012, the MS4 permittees have continued to collect and submit temperature data, with each Annual Report showing that the Rio Grande (receiving water for the Middle Rio Grande watershed) is not adversely affected by the temperature of stormwater from the Albuquerque MS4. AMAFCA has collected data from 2012 to 2021 using tidbit probes and sondes. The temperature monitoring results have not shown temperature exceedances related to stormwater discharges at any of the monitoring locations in the watershed or in the river. In accordance with AMAFCA's Stormwater Management Program (SWMP), AMAFCA has assessed and will continue to assess the potential effect of stormwater discharges into the Rio Grande by collecting and evaluating additional temperature data. Additional information is available in the Dissolved Oxygen and Temperature Program summary documents.



Plot of Temperature Data Collected from Grab Samples in the Rio Grande Through the AMAFCA and CMC Monitoring Programs

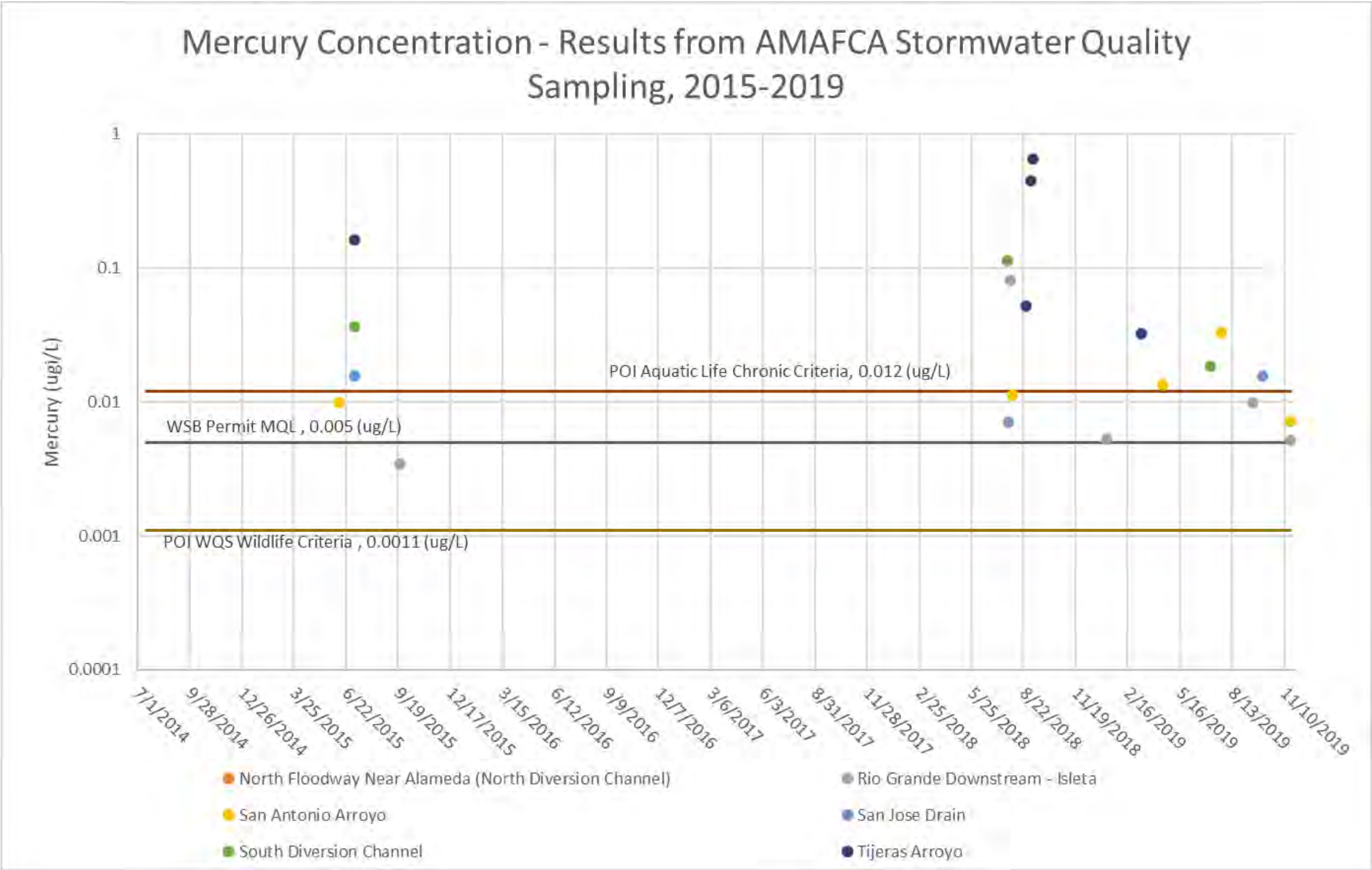


Gross Alpha Results from Grab Samples in the Rio Grande Through the AMAFCA and CMC Monitoring Programs

AMAFCA has been monitoring for mercury in stormwater samples and the graph below shows results obtained throughout the watershed. The CMC has not been monitoring for mercury, as it is not a required parameter in the MS4 Permit. Mercury levels reported as exceeding applicable in-stream water quality standard (WQS) values relate to ‘Wildlife Usage’ WQS for the Pueblo of Isleta; this WQS value is an order of magnitude lower than other mercury WQSs – refer to the table below. AMAFCA has discussed the concern about the magnitude difference and potential error of this WQS with the Pueblo of Isleta related to their Triennial Review.

Water Quality Standards for Mercury for the Middle Rio Grande

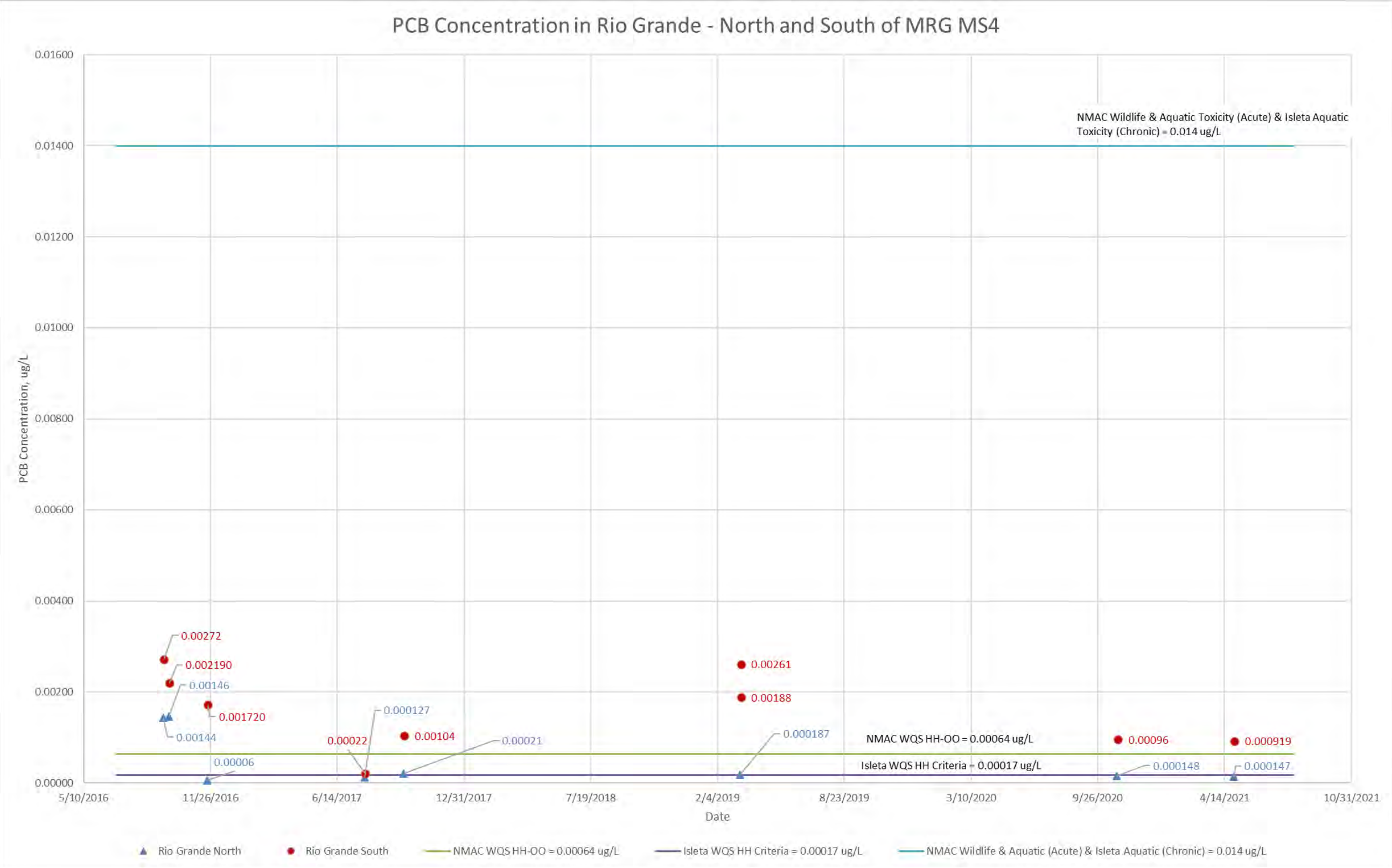
Mercury Pueblo of Isleta Wildlife Usage Criteria	Mercury <i>Pueblo of Isleta</i> <i>& Sandia, Fresh</i> <i>Water Aquatic</i> <i>Life Chronic</i> <i>Toxicity</i>	Mercury State of NM NMAC 20.6.4 <i>Wildlife Habitat</i>	Mercury State of NM NMAC 20.6.4 <i>Drinking Water</i> <i>Supply</i>	Mercury <i>Pueblo of Isleta</i> <i>& Sandia, Fresh</i> <i>Water Aquatic</i> <i>Life Acute</i> <i>Toxicity</i>
WQS: 0.0011 ug/L	WQS: 0.012 ug/L	WQS: 0.77 ug/L	WQS: 2 ug/L	WQS: 2.4 ug/L



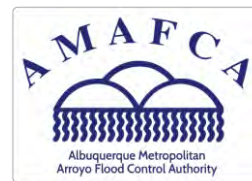
Mercury Results From Stormwater Samples Collected in the Watershed Through the AMAFCA Monitoring Program

AMAFCA and the CMC have been monitoring for PCBs in stormwater samples. The current AMAFCA watershed screening (also referred to as non-compliance sampling) is using Method 608 to test for PCBs. If results are detected with the screening method, AMAFCA would then sample and test with Method 1668. Method 608 tests for both PCBs and pesticides. All AMAFCA screening tests for PCBs have been non detect.

The CMC test all samples for PCBs using Method 1668. This is the required PCB testing methodology for stormwater compliance permit requirements, as is stated in the MS4 Permit, p. 6 of Part III. There are multiple surface WQS values listed for PCBs in both the Pueblo of Isleta and the State of New Mexico standards for the various designated uses. The PCBs measured in samples collected from the Rio Grande during the FY 2021 storm events were all below the minimum quantification level (MQL) established in EPA standards for the MS4 NPDES Permit (Appendix F, 0.2 ug/L for PCBs). The PCB results were also well below the New Mexico Surface WQSs and Pueblo of Isleta Surface WQSs for designated uses, including drinking water (0.5 ug/L) and wildlife habitat, acute aquatic life, and chronic aquatic life (0.014 ug/L). However, the CMC samples from the Rio Grande South location were above the Pueblo of Isleta human health criteria (based on fish consumption only) WQS for surface waters. The human health-organism only criterion is based upon human consumption of fish and other aquatic life that bioaccumulate contaminants over time. The PCB results from 2016 through 2021 are shown below relative to several of the WQSs for PCBs.



PCB Results from Stormwater Samples Collected in the Rio Grande Through the CMC



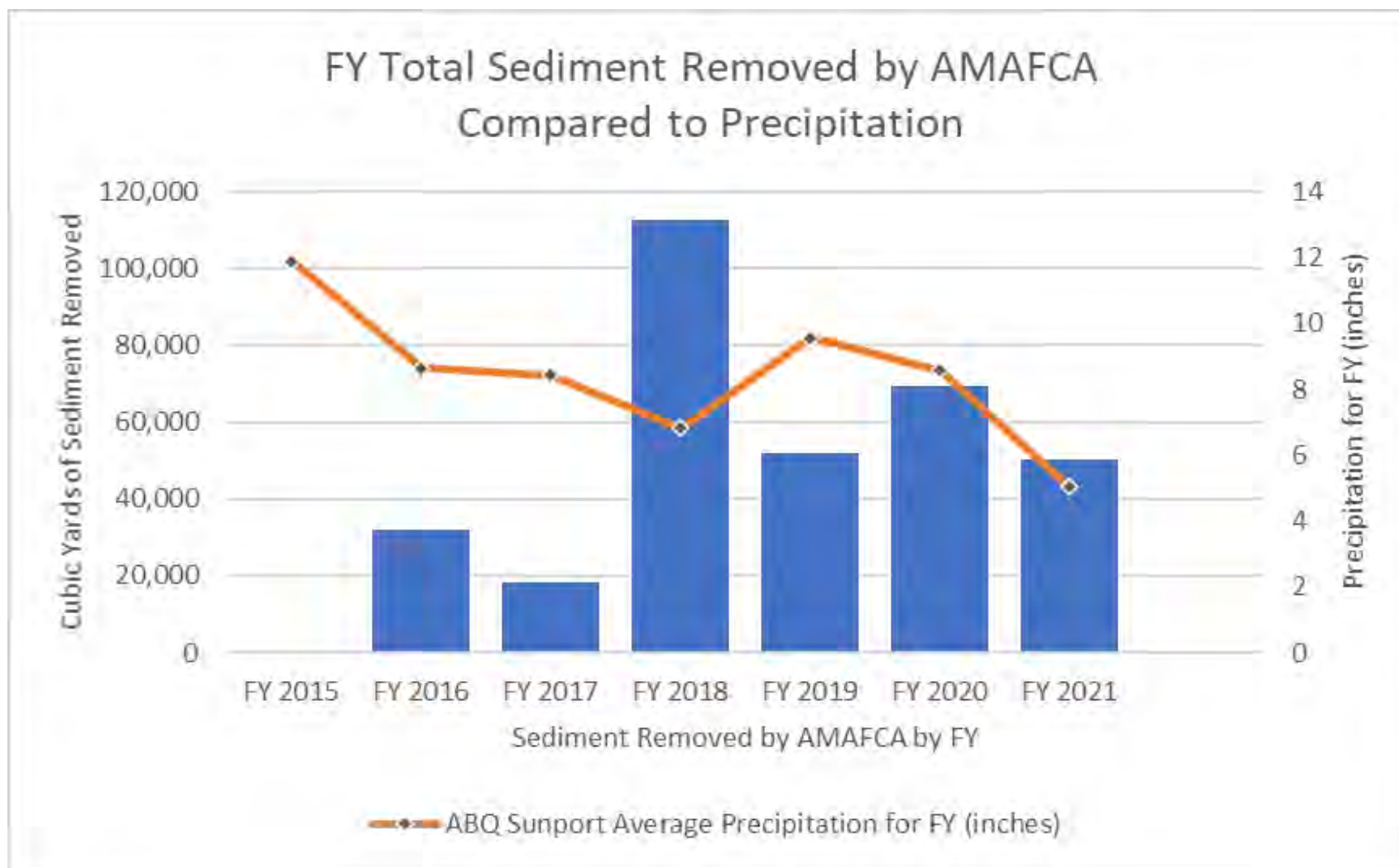
**Summary of AMAFCA's MS4
Sediment Pollutant Load Reduction Program
FY 2021 (July 1, 2020 – June 30, 2021)**

NPDES Permit No. NMR04A000

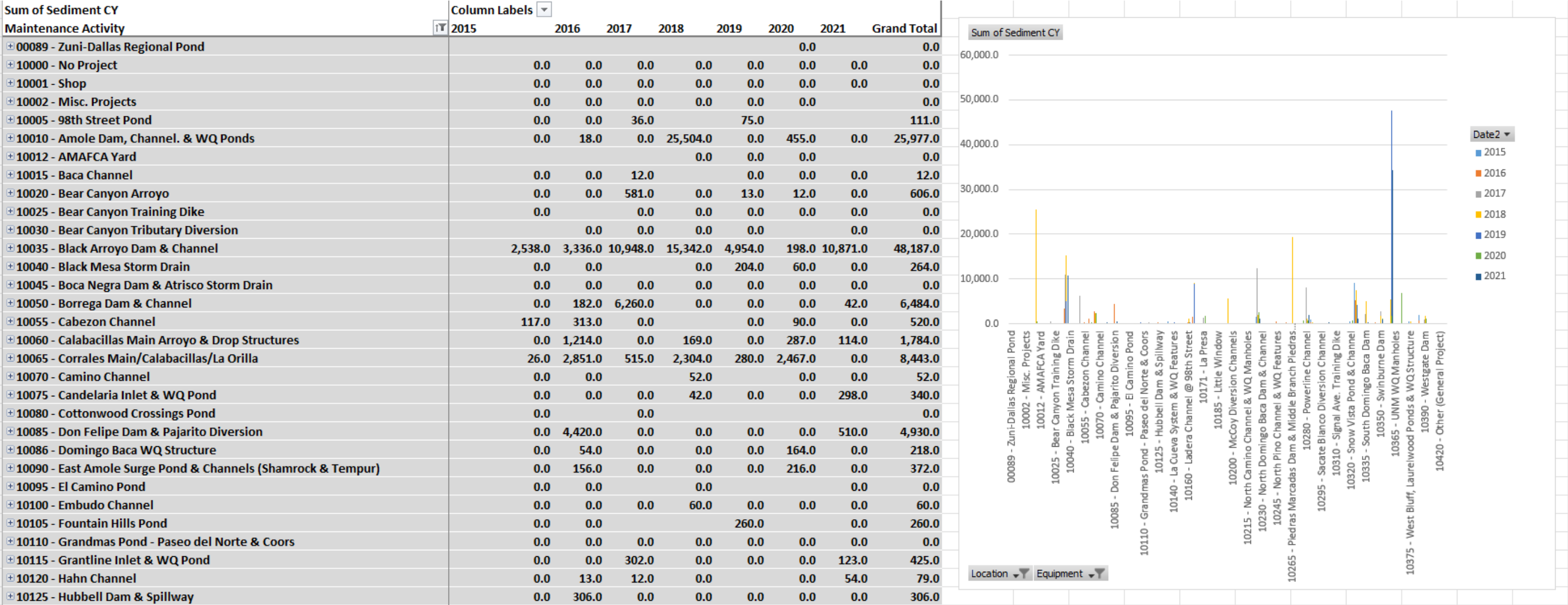
Part I.C.3.b - Endangered Species Act (ESA) Requirements –
Sediment Pollutant Load Reduction Strategy

The purpose of this program is to establish a procedure for AMAFCA to develop, implement, and evaluate a sediment pollutant load reduction strategy within the Municipal Separate Storm Sewer System (MS4). All AMAFCA projects are regional flood control or water quality projects. Stormwater runoff from other MS4s enter AMAFCA facilities, which function as both regional flood control facilities and Best Management Practices (BMPs) to remove sediment from stormwater before the stormwater continues to the Rio Grande. All of these facilities can be seen on the AMAFCA Maintenance Map which can be found on AMAFCA's website (at https://amafca.org/documents/Maintenance_Map.pdf).

In the Middle Rio Grande MS4 area, AMAFCA is not adversely contributing to the sediment pollutant load, but rather functioning to capture the sediment pollutant load generated throughout the watershed by MS4s contributing runoff to AMAFCA facilities. A large portion of AMAFCA's routine Operation and Maintenance (O&M) activities include sediment removal from its facilities. AMAFCA has implemented a crew tracking system to measure the sediment removal quantities at all of its facilities. This tracks sediment removal at each AMAFCA facility and within each defined watershed in the Albuquerque urban area.



Graph Highlighting the Watershed Wide Sediment Removed by AMAFCA Operations



Example of AMAFCA Sediment Removal Tracking Spreadsheet



Photos of AMAFCA Sediment Removal Activities



**Summary of AMAFCA's MS4
Construction Site Stormwater Runoff Control Program
FY 2021 (July 1, 2020 – June 30, 2021)**

NPDES Permit No. NMR04A000

Part I.D.5.a - Construction Site Stormwater Runoff Control Program

Construction site stormwater runoff control is intended to control polluted stormwater runoff from a construction site to Municipal Separate Storm Sewer Systems (MS4s) that is ultimately discharged into local rivers and streams. Sediment is usually the main pollutant of concern for construction site stormwater runoff. Sediment runoff rates from construction sites are typically 10 to 20 times greater than those of agricultural lands, and 1,000 to 2,000 times greater than those of forest lands. During a short period of time, construction sites can contribute more sediment to streams than can be deposited naturally during several decades. In accordance with AMAFCA's SWMP, AMAFCA has continued and will continue to follow its program practices outlined in the program's strategies and procedures to control construction site stormwater runoff.

AMAFCA files Notice of Intent (NOI) documents for a Construction General Permit (CGP) for each of their construction sites that is greater than 1 acre in size. The image below shows the active construction sites in FY 2021.

npdes-ereporting.epa.gov/net-cgp/action/secured/home

Apps Dell INT'L STORMWATE... All Bills | Bill.com Home - City Of Alb... USGS Web Mapper I Have Trash - IDP

EPA United States Environmental Protection Agency My Requests Resources

NeT NPDES Stormwater Construction General Permit

NPDES eReporting Tool

Create New/Request Permissions

Create new NOI or LEW Request Permissions for an existing NOI or LEW Do I qu

My Projects/Sites

Filter

Show 10 entries

Actions	Project / Site Name	NPDES ID	Submission Status	Submission Type	Coverage Status	Coverage Type	Certified / Submitted Date	Effective Date
Actions	Valle de Oro Swale Project	NMR10045C	Approved	New	Active	General Permit	08/12/2021	08/26/2021
Actions	Valle de Oro Outfall Structure	NMR1002OU	Approved	Discontinuation	Discontinued	Low Erosivity Waiver	07/14/2021	01/10/2020
Actions	Black Mesa 3 Dam Outlet Raymac Dam to Don Felipe Dam Phase III and IV Project	NMR1002H1	Approved	Termination	Terminated	General Permit	06/15/2021	10/16/2019
Actions	Lower Bear Tributary Arroyo Regional Flood Control and Water Quality Improvement	NMR1001XR	Approved	Termination	Terminated	General Permit	06/15/2021	03/06/2019
Actions	Black Mesa 3 Dam Outlet Raymac to McCoy Dam - Phase V	NMR1003C4	Approved	Termination	Terminated	General Permit	06/15/2021	10/15/2020

Screen Shot from EPA's Net NPDES Tool Showing Active CGP NOIs

Related to the CGP, EPA published a draft 2022 CGP document for public review and comment in May 2021 and allowed comments until July 12, 2021. AMAFCA worked closely with area MS4s to develop and submit comments on the draft 2022 CGP. AMAFCA also attended an EPA webinar on the draft 2022 CGP.

As part of the North Diversion Channel (NDC) Embayment Earthwork and Grade Control Structures construction project, which AMAFCA began in 2015, AMAFCA regularly monitors the status of vegetation growing in the channel bed of the embayment where it drains into the Rio Grande in Bernalillo County, New Mexico. The NDC Embayment Bed was filled with approximately 29,130 cubic yards of clean fill to raise the existing embayment with approximately 2,380 cubic yards of rock riprap in January and February of 2016. The project impacted approximately 7.9 acres of waters managed by the U.S. Army Corps of Engineers (USACE). AMAFCA must comply with USACE Regulation Regional General Permit NM-14-01, Stream Stabilization and Water Quality Improvement Projects within Urban Ephemeral Channels, relative to the status of vegetation colonizing the recently completed project. Specifically, AMAFCA must monitor vegetation on the newly constructed embayment to demonstrate compliance with the special conditions of the Regional General Permit Verification: Action No. SPA-2015-00147-ABQ.

AMAFCA must manage native species by removing or limiting the presence and spread of non-native and noxious weed species. Many of the non-native and noxious weed species are introduced to the site from rainfall runoff coming from other parts of Albuquerque and it is extremely difficult to eliminate these species completely. Under the permit requirements and stipulations of the USACE, AMAFCA must reduce the presence of non-native species for the site's overall vegetative cover.

In late 2019, AMAFCA met with the USACE to discuss the Special Conditions in the Regional General Permit. Due to the project area within the NDC being a very dynamic system, AMAFCA worked with the USACE to revise the Special Conditions to be in compliance with the Regional General Permit. The Special Conditions changes the Bosque Seed mix to 70-percent native and 30-percent non-native of baseline by year 3, measured at 10 randomly selected metered transects.

During the May 2021 plant field training, AMAFCA staff were split into groups of 3-5 staff members and paired with an SWCA Environmental Consultant biologist. The groups walked throughout the NDC identifying different grass, forb/herb, shrub, and tree species and gave staff tips on how to identify and distinguish between the species while using this plant field guide. During the plant field training, SWCA biologists and AMAFCA observed that there were a significant number of non-native species that are not considered noxious weeds providing ground cover in the NDC. Although these species are considered non-native, SWCA and AMAFCA identified this ground cover as providing a positive ecological function by increasing soil stability and significantly reducing erosion potential at the site. However, if AMAFCA was to remove these species leaving bare ground, then the site would easily be overrun with non-native species and much harder to manage. With these factors in mind, SWCA and AMAFCA staff further developed this field guide to include a color-coded system for staff to quickly differentiate between the different groups of species based on their ecological function and noxious weed status, described in detail below and in the attached plant field guide. AMAFCA may also use this field guide to

identify and locate species listed as non-native and/or noxious and target them for eradication as part of their maintenance activities. Vegetation field training was aimed at recognizing the 70-percent native and 30-percent non-native mix and allowing AMAFCA to maintain this recommendation.

The attached report, *Vegetation Monitoring Report for the North Diversion Channel / SWCA* Project No. 42159.03, February 14, 2020, completed by SWCA, and this letter are considered the year 1 report related to the 2015 USACE Regional General Permit Verification: Action No. SPA-2015-00147-ABQ, with the updated Special Conditions recommendation by SWCA, the vegetation monitoring contractor, and subsequent consultation and agreement by USACE on 70-percent native and 30-percent non-native mix of vegetation.



Photos from AMAFCA's North Diversion Channel Embayment Staff Training in May 2021

Mule-Fat (Seepwillow)



Photo Credit: Max Licher (left and right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Baccharis salicifolia*

Family: Daisies (Asteraceae)

Duration: Perennial

Nativity: Native

General Description: Shrub growing 1 – 4 m tall with a willow-like architecture. Branches are long, wand-like, and tan. Leaves are alternate, sessile or short-petiolate. Leaf blades are lanceolate-elliptic and willow-like growing 3 – 15 cm long and 0.5 – 2 cm wide with margins that are finely and evenly serrate and surfaces dotted with glands. Flowers are whitish or yellowish, discoid, and arranged in terminal, flat-topped clusters. Fruits are small 1 mm achenes with silvery-white pappus. Distinguished by its showy white flowers, shiny resinous, sticky, toothed leaves, and willow-like growth habit.

Ecology: Found along streams and drainages, often forming thickets, below 5,000 feet. Flowers from March – October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Baccharis+salicifolia&formsubmit=Search+Terms>

Example from AMAFCA's North Diversion Channel Embayment Plant Field Guide Used for Staff Training in May 2021

Technical Memorandum

To: Patrick Chavez
Storm Water Quality Engineer
Albuquerque Metropolitan Arroyo Flood Control Authority
2600 Prospect NE
Albuquerque, New Mexico 87107

From: David Lightfoot, Senior Ecologist

Date: February 14, 2020

Re: **Vegetation Monitoring Report for the North Diversion Channel / SWCA Project
No. 42159.03**

INTRODUCTION

This report provides information on the status of vegetation growing in the channel bed of the embayment of the North Diversion Channel (NDC), where it drains into the Rio Grande, in Bernalillo County, New Mexico. The vegetation measurements are part of the NDC Embayment Earthwork and Grade Control Structures project, which began in 2015 by the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA). The North Diversion Channel Embayment Bed (NDCEB) was filled with approximately 29,130 cubic yards of clean fill to raise the existing embayment with approximately 2,380 cubic yards of rock riprap in January and February of 2016. The project impacted approximately 7.9 acres of waters managed by the U.S. Army Corps of Engineers (USACE). AMAFCA must comply with USACE Regulation Regional General Permit NM-14-01, Stream Stabilization and Water Quality Improvement Projects within Urban Ephemeral Channels, relative to the status of vegetation colonizing the recently completed project. Specifically, AMAFCA must monitor vegetation on the newly constructed NDCEB to demonstrate compliance with the following special conditions of the Regional General Permit Verification: Action No. SPA-2015-00147-ABQ (Appendix A) relative to vegetation:

1. All temporarily impacted areas located adjacent to waters of the U.S. shall be restored by the permittee to pre-construction conditions, including original contours, vegetation composition and density (excluding invasive species), and drainage patterns. The permittee shall submit photographs to the Corps Albuquerque District Office that document the success of restoration efforts within 90 days after restoration is complete.
2. The permittee shall conduct invasive plant species management within all temporarily disturbed areas so that invasive plant species comprise no more than 10% of total plant species cover. The permittee shall submit photographs to the Corps Albuquerque District Office that document the success of invasive plant species management by December 31, 2016.
3. The permittee shall ensure that the revegetation area achieves the following performance standards by the timeframe described below, and documentation of actual performance shall be included in the annual monitoring reports as described in Special Condition 10:

- a. Description of plant diversity based on densities of species planted in the Bosque Seed Mix equal to at least 80% of baseline by year 3 and measured using a published plant diversity index methodology.
- b. Target cover of 80% native species planted in the Bosque Seed Mix in the revegetation area are met for herbaceous strata by year 3 and measured by 10 randomly selected metered transects.

The NDCEB was seeded with the Bosque Seed Mix in February 2016. AMAFCA contracted SWCA Environmental Consultants (SWCA) to measure vegetation of the NDC embayment in January 2018 for the first time since the 2016 construction and seeding to comply with special conditions 4, 5, and 7 of the Regional General Permit Verification. SWCA remeasured vegetation on February 11, 2019. Although conducting monitoring during the summer and early fall months may be more ideal, the NDC contains flowing waters from storm runoff throughout that time period. Therefore, monitoring has been scheduled to occur in winter to ensure the safety of those conducting the monitoring field work. The following report contains information from the February 11, 2019 vegetation measurements.

METHODS

The NDC Embayment Earthwork and Grade Control Structures project, approximately 7.9 acres in size, is located where the NDC spills into the Rio Grande in northern Bernalillo County. Figure B.1 in Appendix B provides a map of the project area. Construction on the NDC embayment was completed in January 2016, and the NDCEB was seeded with the Bosque Seed Mix to restore native vegetation to the site. The Bosque Seed Mix species composition is shown in Table 1.

Table 1. Bosque Seed Mix

Common Name	Scientific Name	Pure Living Seed, pounds/acre
Indian ricegrass	<i>Achnatherum hymenoides</i>	2.0
Yerba mansa	<i>Anemopsis californica</i>	0.25
Showy milkweed	<i>Asclepias speciosa</i>	0.25
Desert marigold	<i>Baileya multiradiata</i>	0.25
Sideoats grama	<i>Bouteloua curtipendula</i>	2.0
Black grama	<i>Bouteloua eriopoda</i>	2.0
Blue grama	<i>Bouteloua gracilis</i>	2.0
Squirreltail	<i>Elymus elymoides</i>	2.0
Firewheel	<i>Gaillardia pulchella</i>	0.50
Hooker's evening primrose	<i>Oenothera elata</i>	0.25
Western wheatgrass	<i>Pascopyrum smithii</i>	4.0
James' galleta	<i>Pleuraphis jamesii</i>	2.0
Indiangrass	<i>Sorghastrum nutans</i>	2.0
Sand dropseed	<i>Sporobolus cryptandrus</i>	4.0
Total		23.50

In 2018, SWCA established a series of permanent photograph points were established around the perimeter of the project area with views in and across the embayment to view and visually monitor overall vegetation composition and structure.

For the second year of vegetation monitoring, SWCA visited the NDC site on February 11, 2019, and collected vegetation data along the ten 30-m (98-foot) linear transects that were previously installed in 2018. SWCA personnel, D. Lightfoot and J. Shuck, also took another series of repeat photographs from the permanently marked (geographic coordinates) photo points. The project area photo point locations are presented in Figure B.1 of Appendix B, and the geographic coordinates for each site repeat photograph point are provided in Appendix C.

Ten 30-m (98-ft) linear transects were randomly located across the project area in January 2018, using the ESRI Data Management Create Random Point tool. In ArcGIS, the project area was used as a random point extent constraint with a 10-point limit. Once the random points were created, they were used as center points to create the 30-m transect lines. The Linear Directional Mean tool was used to produce a table of random compass angles and directional means for the 30-m transects (i.e., compass direction, 1° N to 360° N). A random compass direction was assigned to each transect to provide random directions for all ten randomly located transects. The two restrictions for the random locations of each transect were that 1) no transect would extend outside of the project boundary, and 2) no two transects would intersect or be within 5 m of each other. The locations for all ten transects are shown in Appendix B, and the coordinates for the centers of each 30-m transect are provided in Appendix C.

As in 2018, on February 11, 2019, all plants were measured along each 30-m line using the line-point-intercept method following the specific protocols of Herrick et al. (2005)¹ at 1-m (3-ft) intervals along the line, for a total of 30 point measurements per plot. Note that the Bosque Ecosystem Monitoring Program (BEMP) uses continuous line-intercept measurements for vegetation. We chose to use line-point-intercept instead, because it is much more efficient, is subject to less observer bias, and is as accurate as the continuous line-intercept method.² Each plant species intercepted at each of the 30 points per plot was recorded, and the condition of the soil surface at each of the 30 points per plot was recorded as bare ground, biotic soil crust, organic leaf litter, dead and downed wood, or rock.

All plants were identified in the field by experienced biologists; any plant species that could not be identified in the field was collected and identified later. All plant common names, scientific names, name codes, taxonomic classification, and native/non-native status were obtained from the United States Department of Agriculture (USDA) National Resources Conservation Service PLANTS online database.³

Plant species diversity was calculated for the project area using Simpson's ecological species diversity index: $D = 1 - [(\sum n(n-1))/N(N-1)]$.⁴ Simpson's index is one of the most widely used indices of species diversity for ecological applications, and provides values ranging from 0 (low diversity) to 1 (high diversity). See Peet (1974)⁵ for a review of species diversity indices used in ecology.

All wildlife (native vertebrate animals) that were observed while measuring vegetation were also recorded to provide additional information on the natural resources of the project site.

¹ Herrick, J.E., J.W. Van Zee, K.M. Havstad, L.M. Burkett, and W.G. Whitford. 2005. *Monitoring Manual for Grassland, Shrubland and Savanna Ecosystems. Quick Start. Design, Supplementary Methods and Interpretation, 1 and 2*. U.S. Department of Agriculture Agricultural Research Service Jornada Experimental Range, Las Cruces, New Mexico. Tucson: University of Arizona Press. Accessed January 2018.

² Elzinga, C.L., D.W. Salzer, J.W. Willoughby, and J.P. Gibbs. 2001. *Monitoring Plant and Animal Populations*. Malden, Massachusetts: Blackwell Science, Inc. Accessed January 2018.

³ U.S. Department of Agriculture, National Resources Conservation Service. 2019. The PLANTS Database. Available at: <http://plants.usda.gov>. Accessed January 2019.

⁴ Peet, R.K. 1974. The measurement of species diversity. *Annual Review of Ecology and Systematics* 5:285–307. Accessed January 2018.

⁵ See reference citation listed above.

RESULTS

Observations and site photographs in February 2019 (Appendix D) revealed that the NDCEB had dead standing herbaceous vegetation that had grown during the late summer or early autumn of 2018. Soils across the embayment were dry, but indicated signs of previous flooding events in the late summer of 2018, with sediment deposits and riprap lines. Overall, the NDCEB was approximately level, with a slight slope toward the Rio Grande. Four grade control structures were in place, each extending north/south across the NDCEB. Soils and vegetation in the western portion of the embayment appeared to have been under water for longer than soils and vegetation in the eastern portion. Most of the vegetation to the west was composed of scattered annual plants, whereas vegetation to the east of that structure was composed largely of perennial grasses, along with annual plants.

There were 22 species (including one unidentifiable grass species [dead stems only], and one unidentifiable forb species [dead stems only]; both may have been one of the 20 identifiable species) of herbaceous plants that were encountered along the ten vegetation transects. These plant species are listed in Table 2. 14 of those plant species were native, and 6 of those plant species were non-native. 14 of those plant species were grasses, 7 of those plant species were forbs, and 1 was a tree. Four of the species identified in Table 2 are listed in the Bosque Seed Mix. Whereas only 3 species on the Bosque Seed Mix were observed in 2018.

Table 2. Plant Species Recorded from the Ten Vegetation Transects

Scientific Name	USDA Code	Common Name	Family	Life History	Growth Form	Native/ Exotic
<i>Aristida purpurea</i>	ARPU9	purple threeawn	Poaceae	Perennial	Grass	N
<i>Bassia scoparia</i>	BASC5	burningbush	Chenopodiaceae	Annual	Forb	E
<i>Bouteloua curtipendula</i> * ‡	BOCU	sideoats grama	Poaceae	Perennial	Grass	N
<i>Bouteloua gracilis</i> * ‡	BOGR2	blue grama	Poaceae	Perennial	Grass	N
<i>Chloris virgata</i>	CHVI4	feather fingergrass	Poaceae	Annual	Grass	N
<i>Cynodon dactylon</i>	CYDA	Bermudagrass	Poaceae	Perennial	Grass	E
<i>Echinochloa crus-galli</i>	ECCR	barnyard grass	Poaceae	Annual	Grass	E
<i>Eragrostis cilianensis</i>	ERCI	stinkgrass	Poaceae	Annual	Grass	E
<i>Eragrostis pectinacea</i>	ERPE	tufted lovegrass	Poaceae	Annual	Grass	N
<i>Grindelia squarrosa</i>	GRSQ	curlycup gumweed	Asteraceae	Perennial	Forb	N
<i>Machaeranthera canescens</i>	MACAC3	hoary tansyaster	Asteraceae	Annual	Forb	N
<i>Mellilotus albus</i>	MEAL2	sweetclover	Fabaceae	Annual	Forb	E
<i>Pleuraphis jamesii</i> * ‡	PLJA	James' galleta	Poaceae	Perennial	Grass	N
<i>Populus deltoides wislizeni</i>	PODE	Rio Grande cottonwood	Salicaceae	Perennial	Tree	N
<i>Rumex densiflorus</i>	RUDE2	denseflowered dock	Polygonaceae	Perennial	Forb	N
<i>Schedonorus arundinaceus</i>	SCAR7	tall fescue	Poaceae	Perennial	Grass	E
<i>Sporobolus airoides</i>	SPAI	alkali sacaton	Poaceae	Perennial	Grass	N
<i>Sporobolus cryptandrus</i> *	SPCR	sand dropseed	Poaceae	Perennial	Grass	N
<i>Sporobolus wrightii</i>	SPWR2	big sacaton	Poaceae	Perennial	Grass	N
<i>Xanthium strumarium</i>	XAST	rough cocklebur	Asteraceae	Annual	Forb	N
	FORB1	unknown forb 1			Forb	
	GRASS1	unknown grass 1	Poaceae		Grass	

Note: Plant names and other information are from USDA NRCS PLANTS database (2019).

* Species listed in the Bosque Seed Mix observed in 2018. ‡ Species listed in the Bosque Seed Mix observed in 2019.

Results of vegetation data analysis from the ten transects revealed that the average frequency (or “hits”) per transect line was 3.2 hits for native plants and 5.7 hits for non-native plant species, compared to 2.7 hits for native plants and 4.4 hits for non-native plants in 2018. Native plant species accounted for 10.7% (9.02% in 2018) of the average total plant canopy cover per transect, while non-native plant species accounted for 18.6% (14.44% in 2018) of total plant canopy cover per transect. Non-vegetated ground surfaces (largely bare soil and some leaf litter and rocks) accounted for 8.1 average hits per transect (13.3 in 2018) and 27.0% average cover per transect (43.9% in 2018). The proportion of native to non-native plant cover was 11:19 (9:14 in 2018).

The relative percent canopy cover of each of the 20 identified plant species, averaged across all ten transects, is presented in Figure 1. Note that the non-native bermudagrass and barnyard grass were the two dominant species overall, followed by the native grass alkali sacaton. In 2018, non-native barnyard grass, tall fescue grass, and Bermudagrass accounted for most of the vegetation cover, while the native alkali sacaton grass and blue grama grass accounted for large, but lesser proportions of the total vegetation cover. Therefore, a slight increase in native perennial alkali sacaton and overall native plant cover occurred between 2018 and 2019.

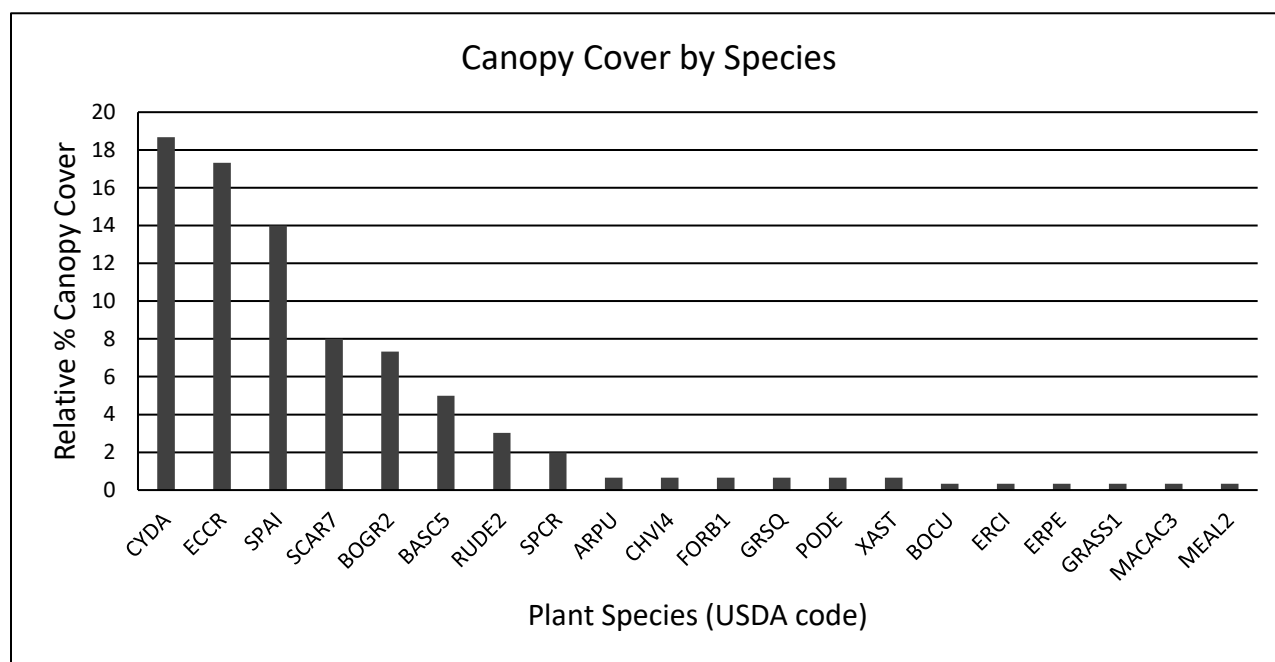


Figure 1. Average canopy cover of each of 22 plant species measured across the 10 vegetation transects. See Table 2 for referencing plant species codes to names.

Calculation of the Simpson’s species diversity index for the plant species measured across the ten transects resulted in a value of 0.15 (relative to a possible range of 0.0 to 1.0). That diversity value is low, indicating that average plant species diversity across the project area was very low in February 2019, indicative of what was growing there at the 2018 late summer peak of plant production.

Wildlife observed at the project site on February 11, 2019, included approximately 40 sandhill cranes (*Antigone canadensis*) that were foraging on the western portion of the NDCEB, approximately 20 Canada geese (*Branta canadensis*) that were foraging in and along the Rio Grande on the west bank of the NDC embayment, and approximately 12 mallards (*Anas platyrhynchos*) that were foraging in ponds

just east of the large concrete grade control structure just outside of the east boundary of the project area. These observations were very similar to those made in January 2018.

DISCUSSION

The results of vegetation monitoring measurements were very similar to 2018 findings. Again in 2019, the NDCEB was dominated by non-native plant species and the vegetation cover was far from the 80% cover of native plant species required by Regional General Permit Verification: Action No. SPA-2015-00147-ABQ. Overall average plant species diversity as measured by Simpson's index was again 0.15, as in 2018, a low value for species diversity (0.0 to 1.0 possible). Four of the species observed in 2019 are listed in the Bosque Seed Mix, whereas only 3 were observed in 2018. The same three species observed in both years include sideoats grama, blue grama, and James' galleta.

Winter, especially February, is not the appropriate time to measure herbaceous vegetation that grows during the summer, peaks in the late summer and early autumn, and dies and senesces in the late autumn and early winter (by late November). All of the plant foliage canopies that SWCA measured along the ten transects were dead-standing, and many dead plant parts had broken off. The February 11, 2019 measurements likely under-represented which plants had been there in the late summer of 2018, depending on when the site was inundated with water. However, most of the dead-standing plants were largely intact, indicating that the plant measurements were indicative of the species compositions and covers that were present when the plants were still alive in late summer 2018. SWCA has collected field data in January/February for the last two years because site conditions in the project area within the NDCEB, are considered unsafe during the late summer and early autumn time period. Typically, the site is inundated with water in the late summer and early autumn and potential storms create a hazardous environment for collecting vegetation data.

The eastern portion of the NDC embayment appeared drier than the western portion, and the eastern portion supported higher numbers of plant species, greater canopy covers, and more perennial plants than the western portion. The western portion appears to have been inundated longer during the growing season, had less vegetation cover, and was dominated by the exotic annual barnyard grass.

2020 Report Amendments

In late 2019, AMAFCA met with the USACE to discuss the Special Conditions in the Regional General Permit. Due to the project area within the NDC being a very dynamic system, AMAFCA worked with the USACE to revise the Special Conditions in order to be in compliance with the Regional General Permit. The Special Condition changes the Bosque Seed mix to 70% native and 30% non-native of baseline by year 3, measured at 10 randomly selected metered transects.

AMAFCA/SWCA will monitor vegetation at the site in fall 2020, during a time when it is considered safe to work within the NDC. Table 3 lists the good, native species recorded during vegetation transect observations in 2019, that may help augment the Bosque Seed Mix in order to be in compliance with the Special Conditions of the Regional General Permit. To support the existing seed mix and native species at the site, AMAFCA will incorporate herbicide spot spraying of non-native species to help meet the revised Special Conditions of the Regional General Permit.

Table 3. Native Plant Species Recorded from the Ten Vegetation Transects

Scientific Name	USDA Code	Common Name	Family	Life History	Growth Form	Native/ Exotic
<i>Aristida purpurea</i>	ARPU9	purple threeawn	Poaceae	Perennial	Grass	N
<i>Bouteloua curtipendula</i>	BOCU	sideoats grama	Poaceae	Perennial	Grass	N
<i>Bouteloua gracilis</i>	BOGR2	blue grama	Poaceae	Perennial	Grass	N
<i>Chloris virgata</i>	CHVI4	feather fingergrass	Poaceae	Annual	Grass	N
<i>Eragrostis pectinacea</i>	ERPE	tufted lovegrass	Poaceae	Annual	Grass	N
<i>Grindelia squarrosa</i>	GRSQ	curlycup gumweed	Asteraceae	Perennial	Forb	N
<i>Machaeranthera canescens</i>	MACAC3	hoary tansyaster	Asteraceae	Annual	Forb	N
<i>Pleuraphis jamesii</i>	PLJA	James' galleta	Poaceae	Perennial	Grass	N
<i>Populus deltoides wislizeni</i>	PODE	Rio Grande cottonwood	Salicaceae	Perennial	Tree	N
<i>Rumex densiflorus</i>	RUDE2	denseflowered dock	Polygonaceae	Perennial	Forb	N
<i>Sporobolus airoides</i>	SPAI	alkali sacaton	Poaceae	Perennial	Grass	N
<i>Sporobolus cryptandrus</i>	SPCR	sand dropseed	Poaceae	Perennial	Grass	N
<i>Sporobolus wrightii</i>	SPWR2	big sacaton	Poaceae	Perennial	Grass	N
<i>Xanthium strumarium</i>	XAST	rough cocklebur	Asteraceae	Annual	Forb	N

Note: Plant names and other information are from USDA NRCS PLANTS database (2019).

APPENDIX A

**Regional General Permit Verification:
Action No. SPA-2015-00147-ABQ**



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS
4101 JEFFERSON PLAZA NE
ALBUQUERQUE, NEW MEXICO 87109

November 2, 2015

Regulatory Division

SUBJECT: Regional General Permit (RGP) Verification – Action No. SPA-2015-00147-ABQ,
North Diversion Channel Embayment Earthwork and Grade Control Structures

Jerry Lovato
Albuquerque Metropolitan Arroyo Flood Control Authority
2600 Prospect NE
Albuquerque, NM 87107

Dear Mr. Lovato,

The U.S. Army Corps of Engineers received your letter dated April 20, 2015, for the proposed North Diversion Channel (NDC) Embayment Earthwork and Grade Control Structures project located at approximately latitude 35.211174, longitude -106.610300, in Bernalillo County, New Mexico. The work, as described in your letter, will consist of filling the embayment area with approximately 29,130 cubic yards (cy) of clean fill material in order to raise the existing grade, and raising three existing grade control structures by adding approximately 2,380 cy of rock rip-rap on top of each structure. The proposed project would impact approximately 7.92 acres of waters of the U.S. We have assigned Action No. SPA-2015-00147-ABQ to this project. Please reference this number in all future correspondence concerning the project.

Based on the information provided, we have determined that the project is authorized by RGP NM-14-01 for Stream Stabilization & Water Quality Improvement Projects within Urban Ephemeral Channels. A summary of this permit is available on our website at <http://www.spa.usace.army.mil/Missions/RegulatoryProgramandPermits/RGP.aspx>. Please refer to our website at <http://www.spa.usace.army.mil/Missions/RegulatoryProgramandPermits/WaterQualityCertification.aspx> for specific information regarding compliance with water quality certification (WQC) requirements. The permittee must ensure that the work complies with the terms and conditions of the permit, including conditions of the Pueblo of Sandia WQC, dated October 23, 2015, and the special conditions listed below.

1. The permittee shall notify the Corps Albuquerque District Office, the U.S. Fish and Wildlife Service (USFWS) New Mexico Ecological Services Field Office, and the Pueblo of Sandia in writing of which construction plan, A, B or C, will be implemented, including the construction start date, 7 days prior to the beginning of ground-disturbing activities.

2. The permittee shall not conduct any activity associated with the authorized project between April 15 and August 15 of any given year.
3. The permittee shall implement erosion control measures for all temporarily disturbed areas, including access and staging areas, to prevent upland erosion into waters of the U.S. prior to commencement of ground-disturbing activities and these measures will be properly maintained by the permittee until temporarily disturbed areas are stabilized. Erosion control measures shall be installed and maintained by the permittee in accordance with the approved Stormwater Pollution Prevention Plan.
4. All temporarily impacted areas located adjacent to waters of the U.S. shall be restored by the permittee to pre-construction conditions, including original contours, vegetation composition and density (excluding invasive species), and drainage patterns. The permittee shall submit photos to the Corps Albuquerque District Office that document the success of restoration efforts within 90 days after restoration is complete.
5. The permittee shall conduct invasive plant species management within all temporarily disturbed areas so that invasive plant species comprise no more than 10 % of total plant species cover. The permittee shall submit photos to the Corps Albuquerque District Office that document the success of invasive plant species management by December 31, 2016.
6. Within 60 days after completion of construction of the authorized project, the permittee shall submit as-built drawings and a description of the work conducted to the Corps Albuquerque District Office. The drawings shall include the following:
 - a. The Department of the Army Action Number.
 - b. A plan view drawing of the location of the authorized work footprint (as shown in permit drawings) with an overlay of the work as constructed in the same scale. The drawing should show all "earth disturbance," aquatic resource impacts, structures, and the boundaries of any on-site and/or off-site avoidance areas. The drawings shall contain, at a minimum, 5-foot topographic contours of the entire site.
 - c. Ground photographs of the completed work. The camera positions and view-angles of the ground photographs shall be identified on a map, aerial photograph, or project drawing.
 - d. A description of all deviations between the work as authorized by the permit and the work as constructed. Clearly indicate on the as-built drawings the location of any deviations.

7. The permittee shall ensure that the revegetation area achieves the following performance standards by the timeframe described below and documentation of actual performance shall be included in the annual monitoring reports as described in Special Condition 10:
 - a. Description of plant diversity based on densities of species planted in the Bosque Seed Mix equal to at least 80% of baseline by year 3 and measured using a published plant diversity index methodology.
 - b. Target percent cover of 80% native species planted in the Bosque Seed Mix in the revegetation area are met for herbaceous strata by year 3 and measured by 10 randomly selected metered transects.
8. This Corps permit does not authorize you, the permittee, to take an endangered species, in particular the Rio Grande Silvery Minnow (*Hybognathus amarus*). In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (ESA) (e.g., a permit under section 10 of the ESA, or a biological opinion (BO) under section 7 of the ESA, with "incidental take" provisions with which you must comply). The enclosed U.S. Fish and Wildlife (USFWS) BO for consultation numbers 02ENNM00-2012-F-0005 and 02ENNM00-2015-F-0363 dated October 14, 2015, contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the BO. Your authorization under this Corps permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the enclosed BO, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BO, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps permit. The USFWS is the appropriate authority to determine compliance with the terms and conditions of its BO, and with the ESA.
9. Please note that the USFWS BO includes a section of conservation recommendations, included by reference to previous BOs; that, if implemented, would further minimize the potential impacts of the project on federally listed threatened and endangered species. While these recommendations are not conditions of this authorization, we encourage you to include each of these recommendations in this and future projects that may affect the species in question.
10. The permittee shall submit annual site monitoring reports to the Corps Albuquerque District Office by December 31st of each year, beginning in 2015, for a minimum of 3 years or until the Corps has determined that the revegetation performance standards in Special Conditions 5 and 7 have been met. The monitoring reports shall be prepared in accordance with Corps Regulatory Guidance Letter 08-03 (Minimum Monitoring

Requirements for Compensatory Mitigation Projects Involving the Restoration, Establishment, and/or Enhancement of Aquatic Resources) and current Corps Albuquerque District Mitigation Monitoring Guidelines available at <http://www.spa.usace.army.mil/Missions/RegulatoryProgramandPermits/Mitigation.asp>

- x. The monitoring reports shall at a minimum include the following:
 - a. Comparison of pre-construction site conditions to an as-built survey as submitted in accordance with Special Condition 6.
 - b. Photographs (minimum 5) from fixed photographic monitoring points with a location reference map indicating camera orientation.
 - c. All data collected to document whether the revegetation site is achieving performance standards described in Special Conditions 5 and 7, and a narrative discussion of progress made toward meeting performance standards.
 - d. Fish and wildlife observations at the mitigation site.
 - e. Summary statement regarding the perceived success of the authorized project and any potential problem areas. Suggestions and a timetable for corrections should be included if it is anticipated that project goals may not be met.
 - f. Results of water quality monitoring conducted in compliance with the National Pollutant Discharge Elimination System Permit NMR4A000 BO (USFWS 2014).
 - g. Date(s) of field inspection(s).
- 11. The permittee shall conduct nesting surveys, using a qualified biologist, for southwestern willow flycatchers (*Empidonax traillii*), western yellow-billed cuckoos (*Coccyzus americanus*), and migratory birds protected under the Migratory Bird Treaty Act prior to commencing construction. If active nests for any of these species are found as a result of the nesting survey, the permittee shall notify the Corps Albuquerque District Office and USFWS New Mexico Ecological Services Field Office in writing and shall not begin any activities associated with this project until both agencies have provided approval, in writing, to proceed.
- 12. In order to prevent unauthorized impacts to waters of the U.S., prior to the commencement of construction, the permittee shall install a barrier (i.e., flagging, temporary fencing, jersey barriers, etc) around areas to be avoided and protected, such as wetlands and riparian areas, in accordance with the proposed project plans submitted with the pre-construction notification dated April 20, 2015, and the Biological Assessment dated June 2015. The permittee shall submit photo documentation of all barrier installation to the Corps Albuquerque District Office within 30 days of such installation.

Our review of this project also addressed its effects on threatened and endangered species and historic properties in accordance with general conditions 8 and 9. Based on the information provided, we have determined that this project will not affect the New Mexico meadow jumping mouse (*Zapus hudsonius luteus*), or designated critical habitat for Rio Grande Silvery Minnow, southwestern willow flycatcher and proposed critical habitat for western yellow-billed cuckoo. We have determined that this project "may affect, but not likely to adversely affect" southwestern willow flycatcher and western yellow-billed cuckoo. We also determined that this project "may affect, likely to adversely affect" the Rio Grande Silvery Minnow. The Corps completed formal consultation with USFWS under the Endangered Species Act, Sec. 7 for effects to federally-listed species on October 14, 2015. We have determined that this project will result in no potential to effect historic properties based on the scope and location of the proposed work and the results of previous cultural resource surveys conducted within and adjacent to the project area, and in consultation with the Pueblo of Sandia. However, please note that the permittee is responsible for meeting the requirements of general condition 8 on endangered species and general condition 9 on historic properties.

This letter does not constitute approval of the project design features, nor does it imply that the construction is adequate for its intended purpose. This permit does not authorize any injury to property or invasion of rights or any infringement of federal, state or local laws or regulations. The permittee and/or any contractors acting on behalf of the permittee must possess the authority and any other approvals required by law, including property rights, in order to undertake the proposed work.

This permit verification is valid until March 26, 2019, unless the RGP is modified, suspended, revoked or reissued prior to that date. Continued confirmation that an activity complies with the terms and conditions, and any changes to the RGP, is the responsibility of the permittee. Activities that have commenced, or are under contract to commence, in reliance on a RGP will remain authorized provided the activity is completed within 12 months of the date of the RGP's expiration, modification, or revocation.

Within 30 days of project completion, the permittee must fill out the enclosed Certification of Compliance form and return it to our office. The landowner must allow Corps representatives to inspect the authorized activity at any time deemed necessary to ensure that it is being, or has been, accomplished in accordance with the terms and conditions of the RGP.

- 6 -

If you have any questions, please contact me at 505-342-3216 or by e-mail at Kelly.E.Allen@usace.army.mil. At your convenience, please complete a Customer Service Survey on-line available at http://corpsmapu.usace.army.mil/cm_apex/t?p=regulatory_survey.

Sincerely,

ALLEN.KELLY.E.
1184042025

Digitally signed by ALLEN.KELLY.E.1184042025
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI,
ou=USA, cn=ALLEN.KELLY.E.1184042025
Date: 2015.11.02 10:49:06 -0700

Kelly E. Allen
Regulatory Project Manager

Enclosure(s)

Copy Furnished:

Scott Bulgrin, Pueblo of Sandia
Joel Lusk, USFWS
Kurt Wagner, AMAFCA

**Certification of Compliance
with Department of the Army Nationwide Permit**

Action Number: SPA-2015-00147-ABQ

Name of Permittee: Jerry Lovato, Albuquerque Metropolitan Arroyo Flood Control Authority

Regional General Permit: NM-14-01 for Stream Stabilization & Water Quality Improvement
Projects within Urban Ephemeral Channels

Upon completion of the activity authorized by this permit and any mitigation required by the
permit, sign this certification and return it to the following address:

Kelly Allen
Albuquerque District, U.S. Army Corps of Engineers
4101 Jefferson Plaza NE
Albuquerque, New Mexico 87109

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army
Corps of Engineers representative. If you fail to comply with this permit, you are subject to
permit suspension, modification, or revocation.

Please enclose photographs showing the completed project (if available).

I hereby certify that the work authorized by the above referenced permit has been completed in
accordance with the terms and conditions of the said permit, and required mitigation was
completed in accordance with the permit conditions.

Date Work Started _____

Date Work Completed _____

Signature of Permittee

Date

APPENDIX B

Project Maps



Figure B.1. Map of the North Diversion Channel Embayment Earthwork and Grade Control Structures project showing the project boundary, the locations of ten randomly located vegetation measurement transects, and the locations of eight permanently located repeat photograph points.

APPENDIX C

Transect and Photograph Data Points

Table C.1. GIS Coordinates and Direction of each 30-meter Transect

Transect	Direction (degrees)	X Center Point (NAD 83 Zone 13)	Y Center Point (NAD 83 Zone 13)
1	0.00	353298.46	3897699.10
2	45.00	353335.73	3897700.71
3	257.85	353365.36	3897675.99
4	158.00	353334.45	3897642.59
5	179.13	353430.55	3897671.03
6	45.00	353474.01	3897695.44
7	270.00	353470.26	3897631.11
8	0.00	353545.58	3897647.95
9	22.00	353555.94	3897588.39
10	110.01	353605.96	3897607.29

Note: GIS = geographic information system

Table C.2. GIS Coordinates of each Photograph Point

Name	X (NAD 83 Zone 13)	Y (NAD 83 Zone 13)
PP 1	353640.46	3897614.03
PP 2	353533.94	3897688.61
PP 3	353413.78	3897728.64
PP 4	353283.48	3897719.82
PP 5	353258.40	3897622.26
PP 6	353382.96	3897620.84
PP 7	353494.90	3897588.14
PP 8	353564.48	3897520.51

Note: GIS = geographic information system

APPENDIX D

Project Photographs



Figure D.1. Transect 1 (0-30), February 11, 2019.



Figure D.2. Transect 1 (30-0), February 11, 2019.



Figure D.3. Transect 2 (0-30), February 11, 2019.



Figure D.4. Transect 2 (30-0), February 11, 2019.



Figure D.5. Transect 3 (0-30), February 11, 2019.

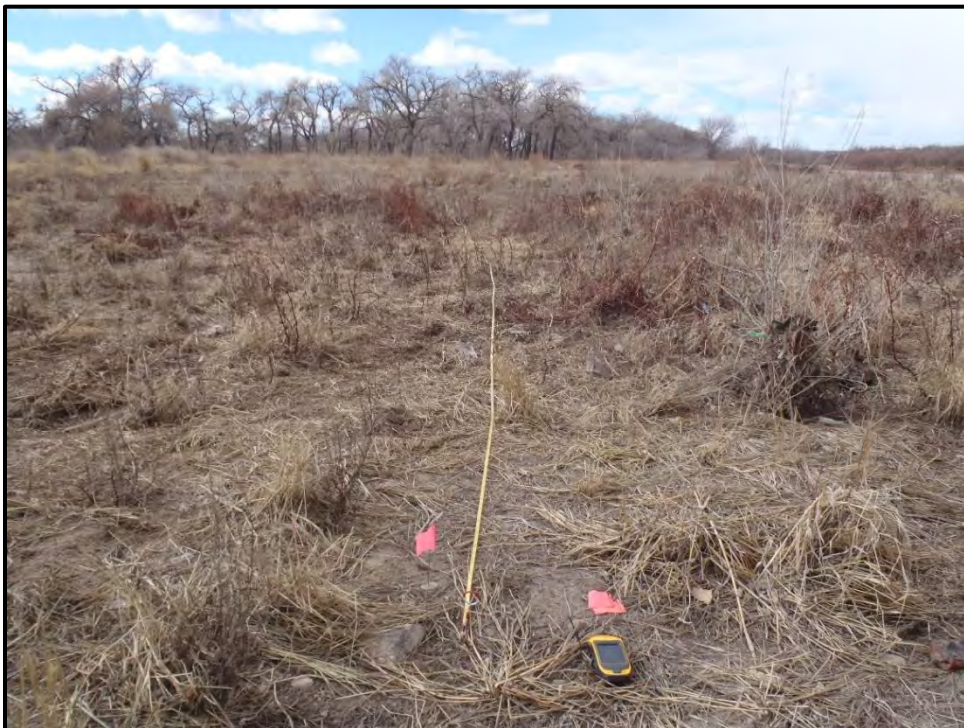


Figure D.6. Transect 3 (30-0), February 11, 2019.



Figure D.7. Transect 4 (0-30), February 11, 2019.

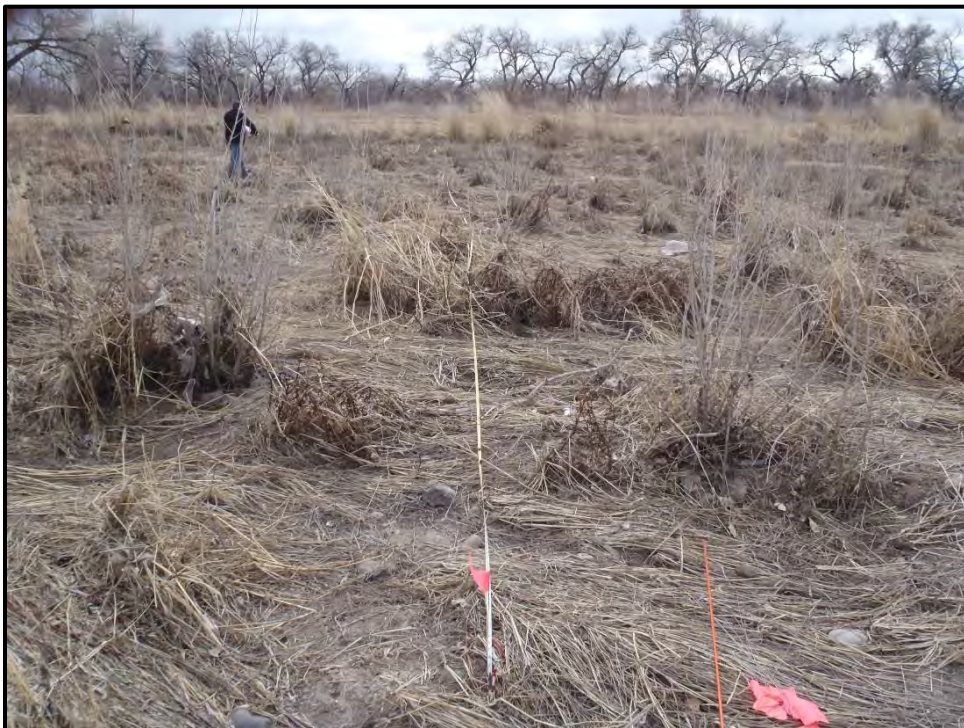


Figure D.8. Transect 4 (30-0), February 11, 2019.

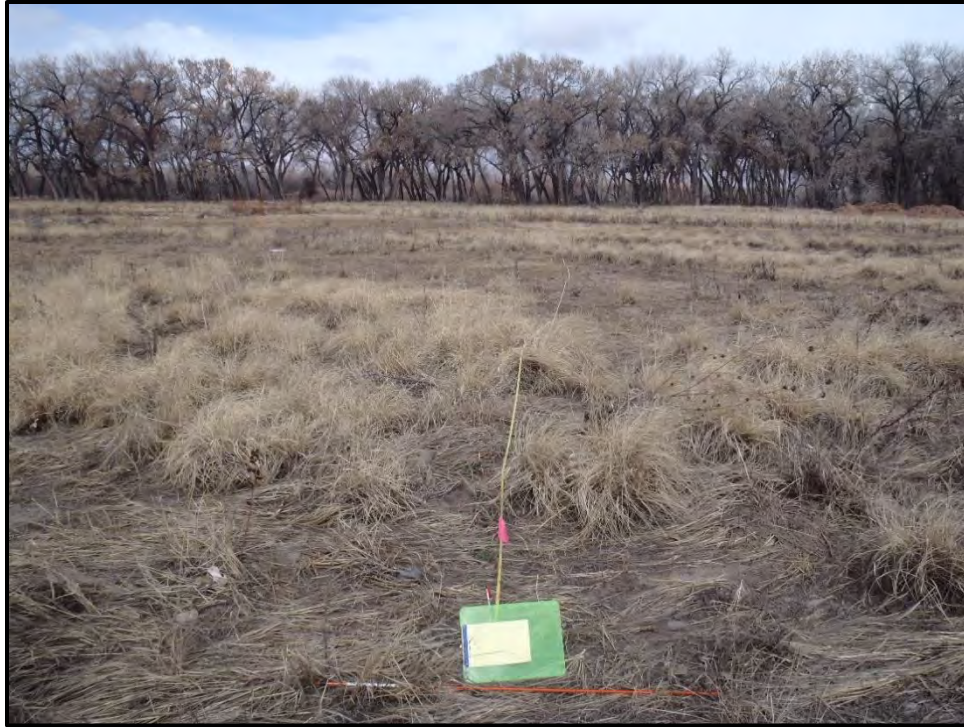


Figure D.9. Transect 5 (0-30), February 11, 2019.



Figure D.10. Transect 5 (30-0), February 11, 2019.



Figure D.11. Transect 6 (0-30), February 11, 2019.



Figure D.12. Transect 6 (30-0), February 11, 2019.



Figure D.13. Transect 7 (0-30), February 11, 2019.



Figure D.14. Transect 7 (30-0), February 11, 2019.



Figure D.15. Transect 8 (0-30), February 11, 2019.

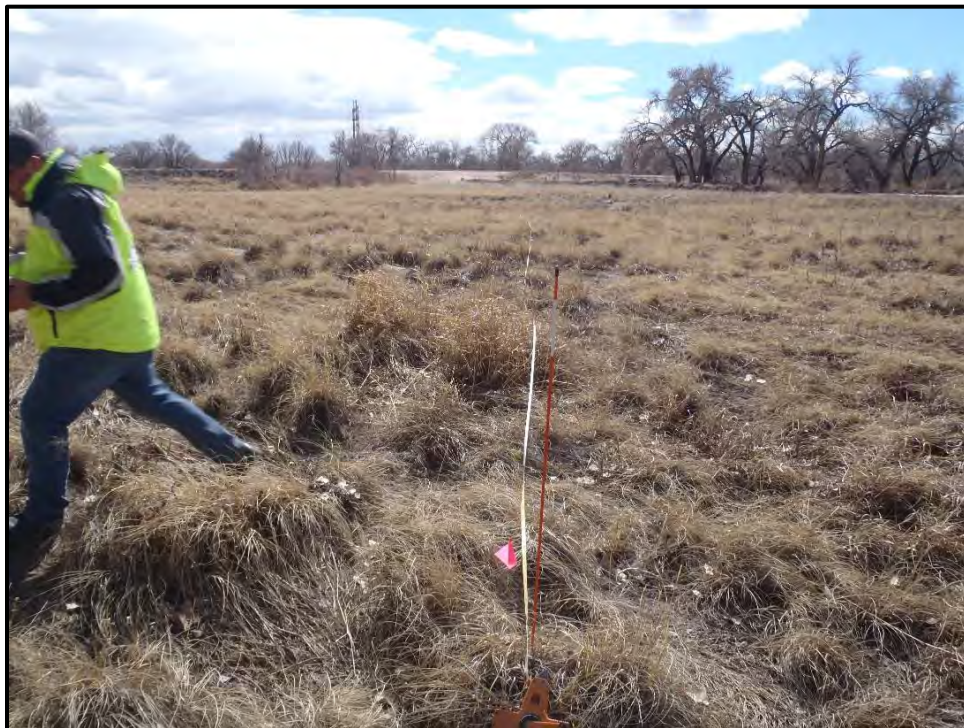


Figure D.16. Transect 8 (30-0), February 11, 2019.



Figure D.17. Transect 9 (0-30), February 11, 2019.



Figure D.18. Transect 9 (30-0), February 11, 2019.



Figure D.19. Transect 10 (0-30), February 11, 2019.



Figure D.20. Transect 10 (30-0), February 11, 2019.



Figure D.21. Photo point 1, February 11, 2019.



Figure D.22. Photo point 2, February 11, 2019.



Figure D.23. Photo point 3, February 11, 2019.



Figure D.24. Photo point 4, February 11, 2019.



Figure D.25. Photo point 5, February 11, 2019.



Figure D.26. Photo point 6, February 11, 2019.



Figure D.27. Photo point 7, February 11, 2019.



Figure D.28. Photo point 8, February 11, 2019.

ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY

NORTH DIVERSION CHANNEL PLANT FIELD GUIDE

Prepared by:

SWCA Environmental Consultants

Unless otherwise noted, all plant information and descriptions were obtained from the USDA, NRCS PLANTS Database and SEINet Arizona – New Mexico Chapter websites.

INTRODUCTION

The Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) contracted SWCA Environmental Consultants (SWCA) to create a plant field guide and conduct a plant identification training for use by AMAFCA staff. Although the field guide was specifically set up for the North Diversion Channel (NDC), this guide can be used throughout AMAFCA properties within the Middle Rio Grande to identify native and non-native plant species. As part of AMAFCA's duties to maintain the NDC, they must manage for native species and remove or limit the presence and spread of non-native and noxious weed species. Many of the non-native and noxious weedy species are introduced to the site from rainfall runoff coming from other parts of Albuquerque and it is extremely difficult to eliminate these species completely. Under the permit requirements and stipulations of the U.S. Army Corps of Engineers (USACE), AMAFCA must reduce the presence of non-native species for the site's overall vegetative cover.

During the plant field training, AMAFCA staff were split into groups of 3-5 staff members and paired with an SWCA biologist. The groups then walked throughout the NDC identifying different grass, forb/herb, shrub, and tree species and giving staff tips on how to identify and distinguish between the species while using this plant field guide. During the plant field training, SWCA biologists and AMAFCA observed that there were a significant amount of non-native species that are not considered noxious weeds providing ground cover in the NDC. Although these species are considered non-native, SWCA and AMAFCA identified this ground cover as providing a positive ecological function by increasing soil stability and significantly reducing erosion potential at the site. However, if AMAFCA was to remove these species leaving bare ground, then the site would easily be overrun with non-native species and much harder to manage. With these factors in mind, SWCA and AMAFCA staff further developed this field guide to include a color-coded system for staff to quickly differentiate between the different groups of species based on their ecological function and noxious weed status, described in detail below. AMAFCA may use this field guide to identify and locate species listed as non-native and/or noxious and target them for eradication as part of their maintenance activities.

This plant field guide gives a general overview of the common species found in the NDC and Middle Rio Grande and can be used by AMAFCA staff to distinguish between native and non-native species and identify noxious weeds that may be present within AMAFCA properties. Each species has been given a color code to allow AMAFCA staff to quickly identify species that fall into one of three categories:

- 1) noxious weeds and/or non-native species that could be a primary target for eradication (**RED**);
- 2) species that are non-native that are a minor concern for eradication due to their current positive ecological role in maintaining soil stability, increasing ground cover, and reducing erosion potential within the channel (**YELLOW**); and
- 3) species that are native to the Middle Rio Grande (**GREEN**).

GRASSES

Alkali Sacaton



Photo Credit: Robert H. Mohlenbrock (left) via USDA-NRCS PLANTS Database and Sherel Goodrich (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Sporobolus airoides*

Family: Grasses (Poaceae)

Duration: Perennial

Nativity: **Native**

General Description: Tufted perennial grass growing in hard and dense clumps, 50-100 cm tall; stems firm and tough, from a hard, knotty base. Alkali sacaton is a robust perennial bunchgrass distinguished by having rolled, drooping leaves and large cresting, fountain-like growth form with open, loose inflorescences bearing spikelets 2-3 mm long.

Ecology: Found on sandy plateaus, washes, bottomlands, and flats; often in alkaline soils from 2,500-6,500 feet. Flowers from May – October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Sporobolus+airoides&formsubmit=Search+Terms>

Barnyardgrass



Photo Credit: Patrick Alexander (left) and Unknown (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Echinochloa crus-galli*

Family: Grasses (Poaceae)

Duration: Annual

Nativity: **Non-Native**

General Description: Annual grass, 30-200 cm tall; stems stout, tufted, genticulate and spreading at the base or stiffly erect, glabrous. Plant often suffused with purple, especially at the stem bases, spikelets, and awns. Barnyardgrass has wide leaves and a dense-flowered panicle with primary branches 3-10 cm long and sometimes very small secondary branches.

Ecology: Found in moist waste places, disturbed sites, frequently in trampled pasturelands, and floodplains below 7,000 feet. Flowers from July – September.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Echinochloa+crus-galli&formsubmit=Search+Terms>

Bermudagrass



Photo Credit: Max Licher (left) and Patrick Alexander (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Cynodon dactylon*

Family: Grasses (Poaceae)

Duration: Perennial

Nativity: **Non-Native**

General Description: Perennial with stolons and rhizomes, stems mostly creeping and stoloniferous with short internodes, forming extensive mats. Inflorescence is distinct with a panicle of 2-9 digitate branches with spikelets densely packed in 2 rows and florets containing pubescent lemmas and lacking awns.

Ecology: Widespread weed; especially frequent along streams in riparian zones from 0-6,000 feet.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Cynodon+dactylon&formsubmit=Search+Terms>

Big Sacaton



Photo Credit: Liz Makings (left) and Sue Carnahan (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Sporobolus wrightii*

Family: Grasses (Poaceae)

Duration: Perennial

Nativity: Native

General Description: Large, coarse-stemmed perennial bunchgrass, 1-2 m tall; stems 4-6 mm thick at base. One of the largest grasses in the region, this species often forms clumps of fountain-like grass more than 1 m in diameter and can grow to 2 m tall. This shrub-sized grass is restricted to floodplains due to its need to access groundwater for survival.

Ecology: Riverbanks, sandy washes, plains, valley flats, and floodplains from 2,000-6,500 feet. Flowers from March – November.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Sporobolus+wrightii&formsubmit=Search+Terms>

Blue Grama



Photo Credit: Max Licher (left and right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Bouteloua gracilis*

Family: Grasses (Poaceae)

Duration: Perennial

Nativity: Native

General Description: Tufted perennial, semi-sod or ring grass, 25-60 cm tall; smooth or minutely pubescent on the stem nodes; with short, stout rhizomes. Blue grama is an incredibly common rangeland grass. Diagnostic characteristics include the blue-green leaves which tend to grow in dense tufts and become curly and straw-colored when they dry out. The inflorescence branches often curl back like an eyelash, especially as the flowers age and dry out.

Ecology: Found on open rocky slopes, forest openings, grasslands between 4,000-8,000 feet. Flowers from July – October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Bouteloua+gracilis&formsubmit=Search+Terms>

Burrograss



Photo Credit: Frankie Coburn (left) via SEINet Arizona – New Mexico Chapter, Patrick Alexander (middle) via Alexander (2013), and Jepson Flora Project (right) via Jepson Flora Project (2021).

Scientific Name: *Scleropogon brevifolius*

Family: Grasses (Poaceae)

Duration: Perennial

Nativity: Native

General Description: Stoloniferous perennial grass that is erect or decumbent at the base and often forming clumps. Stems are 10-20 cm long with wiry, creeping stolons up to 50 cm long. Leaves are mostly basal with short sheaths and strongly veined. Ligules of hairs 1 mm long. Leaf blades can be firm, flat, or folded. Often growing in colonies creating wispy lighter colored patches on the landscape. Has two distinct inflorescences with the male spikelets being contracted spikelets each 2-3 cm long with approximately 5-20 florets and the female spikelets being very distinctive with having multiple long, spreading awns 5-10 cm long.

Ecology: Found in dry valleys, grassy plains and flats, and on open mesas below 5,500 feet. Generally being most abundant on disturbed or overgrazed lands. Flowers in late summer and fall and occasionally in spring.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Scleropogon+brevifolius&formsubmit=Search+Terms>

Cheatgrass



Photo Credit: Max Licher (left and middle) and Sue Carnahan (right) vis SEINet Arizona – New Mexico Chapter.

Scientific Name: *Bromus tectorum*

Family: Grasses (Poaceae)

Duration: Annual

Nativity: **Non-Native**

General Description: Highly invasive annual grass, erect to spreading, growing 30-60 cm tall. Branches are flexuous so groups of spikelets often hang and droop, especially once the plant is dried out. The spikelets are not flattened. Awns are 1-2 cm long and spreading or curling as the plant dries out. Sheaths are closed and the ligule is thin and scarious with jagged edge. The plant is woolly (soft to touch) with early spring growth and at maturity, it has a purplish-brown inflorescence with relatively long awns. Easily distinguished from other grasses because of its nodding inflorescence when mature.

Ecology: Widespread on roadsides, open waste ground, and overgrazed lands from 4,000 – 8,000 feet. Flowers from May – September.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Bromus+tectorum&formsubmit=Search+Terms>

Feather Fingergrass



Photo Credit: Max Licher (left) and Sue Carnahan (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Chloris virgata*

Family: Grasses (Poaceae)

Duration: Annual

Nativity: **Native**

General Description: Tufted annual with weak, decumbent stems, 10-80 cm; shallow roots, occasionally stoloniferous. Prolific on disturbed soils after summer rains, this species can form dense stands in many areas. At the base of the plant, the stems spread along the ground and often have sharp, abrupt bends. Flowering stems have terminal, digitate (finger-like) inflorescences of 6-14 spikes. The spikelets are densely arranged in a row on each spike. Often confused with bermudagrass, however, this species is perennial, native, and strongly stoloniferous and rhizomatous, and has a generally smaller, more delicate appearance with narrower leaves and inflorescence branches. Additionally, finger feathergrass spikelets have awns while bermudagrass spikeless are awnless.

Ecology: Sandy-silty soils, washes, roadsides, agricultural fields, and other disturbed habitats below 5,500 feet. Flowers from July – September.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Chloris+virgata&formsubmit=Search+Terms>

Green Bristlegrass (Foxtail)



Photo Credit: Unknown (left) and Sue Carnahan (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Setaria viridis*

Family: Grasses (Poaceae)

Duration: Annual

Nativity: **Non-Native**

General Description: Tufted annual grass growing up 15-100 cm tall. Leaf blades are flat, 4-10 mm wide and 5-20 cm long, gradually tapering into a slender tip, scaberulous, with wavy margins. Inflorescence is a dense, spikelike cylindrical panicle 2-8 cm long. Each spikelet has 1-3 persistent bristles that remain on the plant after the spikelets have fallen off.

Ecology: Found in lawns, along roads, waste places, irrigated lands, and disturbed ground from 2,000 – 8,000 feet. Flowers from May – October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Setaria+viridis&formsubmit=Search+Terms>

Indian Ricegrass



Photo Credit: Max Licher (left) and Tony Frates (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Achnatherum hymenoides*

Family: Grasses (Poaceae)

Duration: Perennial

Nativity: Native

General Description: Perennial bunchgrass growing 25-70 cm tall with thin, round stems only 1 mm thick that are glabrous or minutely roughened. Distinguished by the open panicle inflorescence with its kinked pedicel branches and plump, often dark-colored seeds that resemble rice grains.

Ecology: Found on dry, well drained soils from 3,500 – 6,500 feet. Flowers between May – August.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Achnatherum+hymenoides&formsubmit=Search+Terms>

James' Galleta



Photo Credit: Max Licher (left and right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Pleuraphis jamesii*

Family: Grasses (Poaceae)

Duration: Perennial

Nativity: **Native**

General Description: Tufted perennial grass, strongly rhizomatous or stoloniferous; stems 20-65 cm tall, usually erect, sometimes decumbent with well-branched bases; nodes often villous, lower internodes glabrous. Contains 3 sessile, awned spikelets that have conspicuous tan-white wedge-shaped papery bracts which often splay out when mature. When the spikelets fall off, they leave a characteristic zig-zag naked seed stalk.

Ecology: Found in canyons, deserts, dry plains, sandy plateaus, pinyon-juniper woodlands, sometimes in ponderosa pine forests at 3,500-7,000 feet. Flowers from May – October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Pleuraphis+jamesii&formsubmit=Search+Terms>

Mouse Barley



Photo Credit: Max Licher (left and right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Hordeum murinum*

Family: Grasses (Poaceae)

Duration: Annual

Nativity: Non-Native

General Description: Annual, loosely tufted grass growing up to 110 cm. Leaf blades are typically flat with occasional curled margins growing up to 28 cm tall. Spikes are 3-8 cm long and pale green or reddish in color, especially the awns which are typically 2-4 cm long.

Ecology: Found on roadsides, in disturbed ground, and other waste places below 5,000 feet. Flowers from April to June (CalFlora).

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Hordeum+murinum&formsubmit=Search+Terms>

Purple Threeawn



Photo Credit: Max Licher (left) and Tony Frates (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Aristida purpurea*

Family: Grasses (Poaceae)

Duration: Perennial

Nativity: Native

General Description: Erect, small, perennial bunchgrass, elliptical stem, can be (but not often) branched at lower nodes, 30-60 cm tall. Often has rolled, thread-like and curved leaf blades, panicles for the most part condensed or contracted with purple awns 2-5 cm or even longer, which are all equal or almost equal in length.

Ecology: Rocky or sandy plains and slopes, found commonly along roadsides from 1,000-7,000 feet. Flowers from April – October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=aristida+purpurea&formsubmit=Search+Terms>

Sand Dropseed



Photo Credit: Sue Carnahan (left) and Max Licher (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Sporobolus cryptandrus*

Family: Grasses (Poaceae)

Duration: Perennial

Nativity: Native

General Description: Erect, tufted perennial grass with round, unbranched stems, 30-100 cm tall. This species is distinguished by having conspicuous tufts of white hairs at the tops of the sheaths; flag blades nearly perpendicular to the stems; and panicles that are contracted and spikelike when young, the open to a pyramid shape at maturity, but remain partially concealed near the bottom by the sheath.

Ecology: Found on sandy soils of dry plains, slopes, and washes, often in open ground, below 7,000 feet. Flowers from May – September.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Sporobolus+cryptandrus&formsubmit=Search+Terms>

Sideoats Grama



Photo Credit: Max Licher (left) and Patrick Alexander (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Bouteloua curtipendula*

Family: Grasses (Poaceae)

Duration: Perennial

Nativity: Native

General Description: Large, often rhizomatous perennial grass that can be tufted or not; stems erect or decumbent, 8-100 cm, solitary or in small to large groups, elliptical to round in cross section, and rarely branched; fibrous roots with long or short rhizomes. The inflorescence has 20-50 small branches, each with 2-7 spikelets which dangle off of one side of the inflorescence axis. The small branches are deciduous and leave a narrow zig-zag pattern with small nodules where they have detached. Leaf blades are 2-7 mm wide and flat, not rolled.

Ecology: Found in open grasslands, limestone outcrops, rocky slopes, woodlands and forest openings from 2,500-7,000 feet. Flowers from June to November.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Sporobolus+cryptandrus&formsubmit=Search+Terms>

Stinkgrass



Photo Credit: Max Licher (left and right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Eragrostis cilianensis*

Family: Grasses (Poaceae)

Duration: Annual

Nativity: **Non-Native**

General Description: Annual grass, highly variable in size and growth form. Stems tufted, erect to prostrate, branching at base and above, to 45 cm but usually smaller. Ring of glands below the nodes and tiny glands along the edges of the leaf blades. May smell like cockroaches, but not everyone is sensitive to this plant's odor. Spikelets of stinkgrass are wider and appear more plumper than most other species of *Eragrostis*, and panicle branches have spikelets nearly to the base.

Ecology: Found on roadsides, in disturbed ground, and other waste places from 3,500-7,000 feet. Flowers from May to October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Eragrostis+cilianensis&formsubmit=Search+Terms>

Tall Fescue



Photo Credit: Robert H. Mohlenbrock (left) via USDA-NRCS PLANTS Database and Paul Rothrock (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Schedonorus arundinaceus*

Family: Grasses (Poaceae)

Duration: Perennial

Nativity: **Non-Native**

General Description: A coarse, clump-forming, cool-season perennial grass, characterized by its relatively wide, dark green, coarsely ridged leaves on the upper surface and shininess on the lower surface. Reproduces by seeds and short rhizomes. Can form dense stands. Clusters of flowers are borne in an open, many-branched inflorescence (5-30 cm long and up to 40 cm long) at the top of the stem. Branches of the flower head are folded up against the stem before and after flowering, giving the inflorescence a spike-like appearance. Seeds are 6-7 mm long, narrow, and dark, with a purplish tinge (The Ohio State University College of Food, Agricultural, and Environmental Sciences 2021).

Ecology: Occurs in grazed woods, along roads, ditches, and railroad tracks, in fallow and abandoned fields, meadows, and marshes and is often found in moist, disturbed places typically below 8,900 feet. Flowers from May – October (Walsh, Roberta A. 1995).

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Schedonorus+arundinaceus&formsubmit=Search+Terms>

Tufted Lovegrass



Photo Credit: Anthony Mendoza (left) and Max Licher (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Eragrostis pectinacea*

Family: Grasses (Poaceae)

Duration: Annual

Nativity: Native

General Description: Tufted annual grass with erect to geniculate stems, 10-80 cm, glabrous, branching at base and above. Tufted lovegrass is distinguished by being an erect-ascending annual. Has a tuft of white hairs at the apex of the leaf sheath. It also lacks a central groove in the seed, lacks glands on the leaf sheath, and lacks the strong smell often attributed to stinkgrass.

Ecology: Found in sandy soils of stream courses and in other disturbed soils between 4,500-6,000 feet. Flowers in summer and fall.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Eragrostis+pectinacea&formsubmit=Search+Terms>

FORBS/HERBS

Alfalfa



Photo Credit: Max Licher (left), Paul Rothrock (middle), and Sue Carnahan (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Medicago sativa*

Family: Legumes (Fabaceae)

Duration: Annual or Perennial

Nativity: **Non-Native**

General Description: Herbaceous plant growing up to 90 cm tall with stems that are decumbent to erect and ascending, many branched, and have herbage that is glabrous to puberulent. Leaves are alternate, pinnately trifoliate with leaflets that are lanceolate to obovate between 10-25 mm long. Leaflets are often sharply serrate at the tip with margins that are dentate, petioles 5-20 mm long. The flowers are small, often violet to deep purple but can also be greenish yellow. Flowers are borne in a dense, subcapitate raceme. Known to smell great when fresh.

Ecology: Found in waste areas, roadsides, escaped from cultivated areas, and near livestock areas, typically below 5,000 feet. Flowers between April – October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Medicago+sativa&formsubmit=Search+Terms>

Burningbush (Koshia)



Photo Credit: Max Licher (left), Patrick Alexander (middle), and Patrick Alexander (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Bassia scoparia*

Family: Goosefoots (Chenopodiaceae)

Duration: Annual

Nativity: **Non-Native**

General Description: Herbaceous annuals up to 1.5 m tall, stems striated, erect and many-branched. Herbage somewhat arachnoid with scattered, long hairs. Plants are dark green when young and turn bright red with maturity. Can sometimes form dense stands and is highly drought resistant. Differentiated from other species of *Bassia* by its annual duration, branching stems, and thin, flat leaves.

Ecology: Found on saline or alkaline soils, in fields, pastures, rangelands, and disturbed areas, among sagebrush, desert scrub, chaparral, and pinyon-juniper grasslands and shrublands from 2,500-10,000 feet. Flowers from June – October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Bassia+scoparia&formsubmit=Search+Terms>

Carelessweed



Photo Credit: Max Licher (left), Max Licher (middle), and Patrick Alexander (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Amaranthus palmeri*

Family: Amaranths (Amaranthaceae)

Duration: Annual

Nativity: Native

General Description: Annual herb, usually erect with a well-developed main axis, 0.2-3 m tall, with the height and growth form highly variable depending on soil moisture. Herbage is glabrous or sparsely pubescent but not glandular. Inflorescences are terminal, mostly-leafless spikes that can become quite large. Occasionally will develop small glomerules of flowers, but not well-developed spikes in the leaf axils. Males and females are separate plants.

Ecology: Widespread weed that grows quickly in disturbed areas, abundant in river bottoms and irrigated land between 0-5,500 feet. Flowers in summer and fall.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Amaranthus+palmeri&formsubmit=Search+Terms>

Common Dandelion



Photo Credit: Max Licher (left, middle, and right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Taraxacum officinale*

Family: Daisies (Asteraceae)

Duration: Perennial

Nativity: **Native**

General Description: Herbaceous perennial growing up to 60 cm tall with 1-10 hollow stems with a milky sap that are erect or ascending. Stems can sometimes be purplish and are glabrous or sparsely villous. Leaves are usually 10 cm long with margins that are sinuate-pinnatifid to subentire with the longer lobes toothed and with intermediate small teeth. Flowers are yellow. Fruits turn into the typical dandelion puff ball.

Ecology: Found on lawns and roadsides, in damp low places, waste grounds, and disturbed banks and shores from 2,500 – 9,000 feet. Flowers between April – September.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Taraxacum+officinale&formsubmit=Search+Terms>

Common Sunflower



Photo Credit: Max Licher (left) and Max Licher (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Helianthus annuus*

Family: Daisies (Asteraceae)

Duration: Annual

Nativity: **Native**

General Description: Stout annual herbs 30 cm – 2 m tall or more with erect, rough-hairy stems. Only the lowermost leaves are opposite, otherwise they are alternate along the stem, long-petioled, with broad ovate leaves (especially the lower leaves) measuring 4-20 cm long by 3-15 cm wide. Leaf edges are coarsely toothed to almost entire and are rough-hairy. Flower heads are large, showy, and radiate with yellow or brown centers with yellow petals. Flowers are often solitary or few at the ends of stems and branches.

Ecology: Found in open or disturbed areas such as roadsides and floodplains, from 1,000-7,000 feet. Flowers from March – October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Helianthus+annuus&formsubmit=Search+Terms>

Curlycup Gumweed



Photo Credit: Max Licher (left), Max Licher (middle), and Max Licher (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Grindelia squarrosa*

Family: Daisies (Asteraceae)

Duration: Perennial

Nativity: **Native**

General Description: Perennial herbs, occasionally as large as subshrubs, that grow up to 1 m tall. Stems 1 to several, erect, branching above, usually whitish, sometimes reddish or grayish. Has a gummy resin that is sticky when touched. Yellow flower heads have distinctive spreading or recurved tips and oblong, saw-toothed leaves.

Ecology: Found on sands, clays, and subalkaline soils, in disturbed sites, plains, hills, roadsides, along streams, and in forest and woodland understories from 4,000-8,000 feet. Flowers from July – October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Grindelia+squarrosa&formsubmit=Search+Terms>

Curly Dock



Photo Credit: Max Licher (left) and Sue Carnahan (middle and right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Rumex crispus*

Family: Buckwheats (Polygonaceae)

Duration: Perennial

Nativity: **Non-Native**

General Description: Perennial herb growing 30-120 cm tall. Stems are stout, erect, simple, or branched above the middle and are glabrous, and greenish to reddish. Leaves are in a basal rosette and alternate along the stems on slender petioles. Basal leaves are lanceolate 10-40 cm long with distinguished ruffled (crisped) edges with the stem leaves being much smaller. Flowers are greenish in a terminal panicle toward the top half of the plant. Fruits are reddish-brown.

Ecology: Found in moist areas from 3,000 – 9,000 feet. Flowers from March – October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Rumex+crispus&formsubmit=Search+Terms>

Cutleaf Vipergrass



Photo Credit: Tony Frates (left, middle, and right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Scorzonera laciniata*

Family: Daisies (Asteraceae)

Duration: Perennial

Nativity: **Non-Native**

General Description: Herbaceous plant growing 20-40 cm tall with hollow stems with a white milky sap. Bright yellow flowers are 2-5 cm wide and resemble dandelion flowers. Each stem has one flower at the end. Leaves are often deeply dissected with long, linear lobes that can often resemble grass (Montana State University Extension and Montana Noxious Weed Education Campaign 2019)

Ecology: Found in disturbed areas such as lawns, roadsides, and pastures. Fruiting from early to late summer.

More Information and Photos: http://www.sarc.montana.edu/documents/weedposts/May%202019%20Weed%20Post_cutleaf%20vipergrass.pdf

Field Bindweed



Photo Credit: Max Licher (left) and Sue Makings (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Convolvulus arvensis*

Family: Morning Glories (Convolvulaceae)

Duration: Perennial

Nativity: **Non-Native**

General Description: Perennial twining vine with slender, branching stems that often form large patches. Herbage can be glabrous or somewhat hairy. Leaves are alternate along the stems and typically 3-4 cm long, oblong to ovate with a usually triangular shape at the base. Flowers are white to pink with 1-3 flowers per node with 5 petals that are fully fused into a funnel-shaped corolla.

Ecology: Found in disturbed habitats, orchards, and gardens from 3,500 – 8,000 feet. Flowers between May to September.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Convolvulus+arvensis&formsubmit=Search+Terms>

Hoary Tansyaster



Photo Credit: Max Licher (left), Liz Makings (middle), and Max Licher (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Machaeranthera canescens*

Family: Daisies (Asteraceae)

Duration: Annual

Nativity: **Native**

General Description: Annual herb growing up to 70 cm tall; stems branched; herbage glabrous, puberulent, or canescent, sometimes also stipitate-glandular or gland-dotted. Leaves are alternate and usually sessile along the stems. Flower heads are showy, radiate, and purple with yellow centers.

Ecology: Found in open, often sandy sites, on flats and slopes, from 3,000-9,500 feet. Flowers from June – October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Machaeranthera+canescens&formsubmit=Search+Terms>

Lambsquarters



Photo Credit: Max Licher (left) and Patrick Alexander (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Chenopodium album*

Family: Goosefoots (Chenopodiaceae)

Duration: Annual

Nativity: Native/Non-Native

General Description: Herbaceous annuals up to 0.5 m tall; stems erect to sprawling; herbage sparsely to densely farinose (the hairs at first blister-like, becoming mealy); plants grayish green in color and not aromatic. Leaves are alternate and petiolate with petioles up to 2.5 cm long. Leaves are deltoid, oval, or rhombic-ovate in shape with sinuous dentate to irregularly toothed or entire margins. Flowers are inconspicuous, green, and clustered arranged in terminal and lateral spikes.

Ecology: Found in disturbed areas, cultivated fields, and roadsides from 0-4,500 feet. Fruiting from late summer through fall.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Chenopodium+album&formsubmit=Search+Terms>

Little Hogweed



Photo Credit: Max Licher (left) and Sue Carnahan (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Portulaca oleracea*

Family: Purslanes (Portulacaceae)

Duration: Annual

Nativity: Native/Non-Native

General Description: Succulent annual herb from a short slender taproot and a few fibrous roots; stems prostrate or ascending, radiating out from the center of the plant to form a sprawling mat up to 60 cm wide; stems fleshy, glabrous, and usually red. Leaves alternate or opposite along the stems, ovate or spoon-shaped, and succulent. Yellow solitary or clustered flowers with 5 petals.

Ecology: Found in open, disturbed locations including the edges of farm fields, irrigation ditches, and roadsides below 8,500 feet. Flowers from June – October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Portulaca+oleracea&formsubmit=Search+Terms>

Prickly Russian Thistle



Photo Credit: Sue Carnahan (left), Anthony Mendoza (middle), and Liz Makings (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Salsola tragus*

Family: Goosefoots (Chenopodiaceae)

Duration: Annual

Nativity: **Non-Native**

General Description: Annual herb growing up to 100 cm with many-branched stems that detach at the base after fruiting, leading to its other common name “tumbleweed”. Often has reddish longitudinal striations, is glabrous or somewhat hairy. Fresh young plants have succulent stems and leaves that harden with age. Leaves are alternate, sessile, and threat-like growing 1-5 cm long and sharp tipped. Flowers are pink to white, solitary on the leaf axils, and perfect 5-merous without petals. Fruits are small shiny black seeds 1-2 mm wide.

Ecology: Widespread on disturbed ground from 0 – 8,000 feet. Flowers from mid-July – early October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Salsola+tragus&formsubmit=Search+Terms>

Silverleaf Nightshade



Photo Credit: Max Licher (left and right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Solanum elaeagnifolium*

Family: Nightshades (Solanaceae)

Duration: Perennial

Nativity: **Native**

General Description: Perennial herb growing up to 1 m tall. Herbage is silvery-canescens with finely stellate hairs. Stems, petioles, and leaf midribs prickly with slender yellowish spines that are 1-5 mm long. Leaves are oblong to lanceolate, 3-10 cm long and 4-25 mm wide with prominent veins and alternate on the stem. Flowers are showy and purple with yellow stamens in few-flowered clusters at branch tips. Fruits are round yellow or brownish berries 9-14 mm wide.

Ecology: Found on sandy plains, arroyos, outwash slopes, and disturbed areas below 6,500 feet. Flowers from March – October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Solanum+elaeagnifolium&formsubmit=Search+Terms>

Rough Cocklebur



Photo Credit: Liz Makings (left) and Max Licher (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Xanthium strumarium*

Family: Daisies (Asteraceae)

Duration: Annual

Nativity: **Native**

General Description: Easily distinguished by its large fruits that are burs with long hooked bristles. The leaves are sand-papery to the touch and the flowers resemble those of ragweed. Annual herb that grows 20-80 cm tall (occasionally up to 2 m tall); stems erect and are appressed-hairy or sub-glabrous. Leaves are often triangular in shape and alternate along the stems on long petioles.

Ecology: Found in moist, disturbed areas including fields, waste places, floodplains, and lake beaches below 7,500 feet. Flowers from April – October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Xanthium+strumarium&formsubmit=Search+Terms>

Sweetclover



Photo Credit: Liz Makings (left), Jillian Cowles (middle), and Susan Hewitt (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Melilotus albus*

Family: Legumes (Fabaceae)

Duration: Annual

Nativity: **Non-Native**

General Description: Herbaceous annual growing up to 2 m tall; stems erect, herbage glabrous to strigose. This pretty plant can be small and delicate or become tall, bushy, and open branching, with long, slender inflorescences adored with pendant, ranked, white, bell-like flowers and 3-lobed leaves with toothed margins on the leaflets.

Ecology: Found in pastures, open, and disturbed areas up to 6,500 feet. Flowers from May – September.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=melilotus+albus&formsubmit=Search+Terms>

Yellow Salsify



Photo Credit: Paul Rothrock (left), Ries Lindley (middle), and Frank Rose (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Tragopogon dubius*

Family: Daisies (Asteraceae)

Duration: Annual

Nativity: **Non-Native**

General Description: Annual or biennial herb growing 40-80 cm tall. Stems are erect and branching from the base. Contains a few basal leaves, but most are alternate and sessile along the stem. Leaf blades are elongate and grass-like growing to about 15 cm long and often covered with long tangled hairs when young (losing the hairs with age). Flower heads are showy, yellow, and ligulate. Flowers are solitary on peduncles that are visibly inflated at the top. There are 10-13 bracts that grow in 2 equal series. The bracts are lanceolate with long-attenuate tips growing 2-4 cm tall in flower and 3-6 cm tall in fruit, exceeding the florets in length. Fruits are achenes tapering into a beak at the top and topped with a large pappus of white bristles like a dandelion.

Ecology: Found on disturbed ground below 9,600 feet. Flowers from June – September.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Tragopogon+dubius&formsubmit=Search+Terms>

SHRUBS

Narrowleaf Willow (Coyote Willow)



Photo Credit: Sue Carnahan (left) and Max Licher (middle and right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Salix exigua*

Family: Willows (Salicaceae)

Duration: Perennial

Nativity: **Native**

General Description: Large shrub growing 0.5 – 6 m tall often short-lived and thicket forming. Branches are often gray, red, to yellow brown and glabrous. Branchlets are glabrescent to hairy. Leaves are alternate along the branchlets on glabrous to hairy petioles 1- 9 mm long. Blades are linear to ligulate 3 – 16 cm long and 2 – 9 mm wide, often 10 – 28 times long as they are wide. Lower leaf surface is glaucous or densely silky and the upper leaf surface shiny. Flowers are catkins 2.5 – 5 cm long, each flower subtended by a greenish, whitish, yellowish, or tawny bract. Floral bracts on female flowers fall off soon after flowering. Fruits are capsules 3 – 7 mm long, glabrous or hairy, splitting into 2 sections to release many cottony seeds.

Ecology: Found in thickets along watercourses from 1,000 – 8,500 feet. Flowers from March – June.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Salix+exigua&formsubmit=Search+Terms>

Fourwing Saltbush



Photo Credit: Anthony Mendoza (left), L.R. Landrum (middle), and Max Licher (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Atriplex canescens*

Family: Goosefoots (Chenopodiaceae)

Duration: Perennial

Nativity: Native

General Description: Shrub growing 1.5-2 meters tall in a moundlike formation that is much branched and drought deciduous. Leaves are alternate, sessile, gray-green, entire, narrowly spatulate to narrow oblong, and salty tasting growing up to 5 cm long. Flowers are inconspicuous, tiny, and usually yellow or brown. Fruits are distinguished by their seeds enclosed by 4-winged bracts.

Ecology: Found on sandy or gravelly soils, from desert scrub to pinyon-juniper communities from 300 – 6,500 feet. Flowers between spring and summer.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Atriplex+canescens&formsubmit=Search+Terms>

Rubber Rabbitbrush



Photo Credit: Max Licher (left and right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Ericameria nauseosa*

Family: Daisies (Asteraceae)

Duration: Perennial

Nativity: **Native**

General Description: Broom-like shrub growing up to 2 m tall. Stems are white to green, flexible, and covered with dense, felt-like hairs (tomentum). Leaves are alternate, sessile, and usually crowded. Leaf blades are linear to filiform up to 7 cm long with glabrous to tomentose surfaces often dotted with glands. Flower heads are yellow, discoid, and numerous in terminal clusters up to 12 cm wide. The ring of bracts wrapped around the flower head is narrow. Fruits are tan achenes, glabrous, hairy, and topped with a whitish pappus. This is a highly variable species with over 20 varieties and is distinguished by it being most often gray-green and tomentose.

Ecology: Found in open places in valleys, plains, and foothills from 2,000 – 8,000 feet. Flowers from July – October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Ericameria+nauseosa&formsubmit=Search+Terms>

Mule-Fat (Seepwillow)



Photo Credit: Max Licher (left and right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Baccharis salicifolia*

Family: Daisies (Asteraceae)

Duration: Perennial

Nativity: **Native**

General Description: Shrub growing 1 – 4 m tall with a willow-like architecture. Branches are long, wand-like, and tan. Leaves are alternate, sessile or short-petiolate. Leaf blades are lanceolate-elliptic and willow-like growing 3 – 15 cm long and 0.5 – 2 cm wide with margins that are finely and evenly serrate and surfaces dotted with glands. Flowers are whitish or yellowish, discoid, and arranged in terminal, flat-topped clusters. Fruits are small 1 mm achenes with silvery-white pappus. Distinguished by its showy white flowers, shiny resinous, sticky, toothed leaves, and willow-like growth habit.

Ecology: Found along streams and drainages, often forming thickets, below 5,000 feet. Flowers from March – October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Baccharis+salicifolia&formsubmit=Search+Terms>

TREES

Honeylocust



Photo Credit: Paul Rothrock (left and middle) and Cesar Castillo (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Gleditsia triacanthos*

Family: Legumes (Fabaceae)

Duration: Perennial

Nativity: **Native**

General Description: Perennial tree growing 50 – 140 feet tall with boles that are short and often divided near the ground and trunks and lower branches armed with large thorns. Thorns usually have one point or branch into many points, commonly forming dense clusters. Thorns are usually soft and green when young then hardening and turning reddish or black to gray with age. Leaves are alternate, oddly 2-pinnate and 1-pinnate. 2-pinnate leaves with 4 – 20 elliptic leaflets and 1-pinnate leaves with 20 – 28 elliptic leaflets. Leaf blades are glabrous and pinnately veined. Flowers are small and bilateral in fragrant, narrow hanging clusters that are typically yellow-green with 5 petals. Fruits are legume pods 20 – 40 cm long and generally curved and often twisted.

Ecology: Found in moist riparian to dry upland woodlands up to 2,500 feet. Flowers from May – June.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Gleditsia+triacanthos&formsubmit=Search+Terms>

Rio Grande Cottonwood



Photo Credit: Paul Rothrock (left), Morton Arboretum (middle), and Jason Sturner (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Populus deltoides* ssp. *wislizeni*

Family: Willows (Salicaceae)

Duration: Perennial

Nativity: **Non-Native**

General Description: Large tree up to 18-35 m tall, but usually less than 20 m tall. Leaves have 5-10 teeth on each side of the margins and is usually slightly wider than it is long. Tends to grow in small, scattered groves along the Rio Grande.

Ecology: Found in floodplains, permanent streams, near springs, and usually in moist soil. Often planted near ranches, irrigation ditches, and in towns between 3,200-7,600 feet. Flowering from March – May.

More Information and Photos:

<https://swbiodiversity.org/seinet/taxa/index.php?taxon=Populus+deltoides+subsp.+wislizeni&formssubmit=Search+Terms>

Russian Olive



Photo Credit: Morton Arboretum (left), Max Licher (middle), and Susan Hewitt (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Elaeagnus angustifolia*

Family: Elaeagnaceae

Duration: Perennial

Nativity: **Non-Native**

General Description: Fast-growing tree/shrub up to 12 m tall; bark is shreddy and gray; branches can be reddish, often with long thorns. Leaves are alternate, silvery, oblong, and two-toned with a grayish-green upper surface and silvery, densely scaled lower surface. Yellow flowers are 1 cm long and berries are orange and olive-like.

Ecology: Found near human disturbance, often along springs, seeps, irrigation ditches, and riparian zones. Generally found between 3,000-7,000 feet in the Southwest. Flowers between May – June.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Elaeagnus+angustifolia&formsubmit=Search+Terms>

Saltcedar



Photo Credit: Sue Carnahan (left and middle) and Liz Makings (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Tamarix ramosissima*

Family: Tamaricaceae

Duration: Perennial

Nativity: **Non-Native**

General Description: Invasive, exotic shrub/tree growing between 1 – 7 meters tall with many slender branches. Leaves are minute, alternate, and scale-like. Flowers are pale pink to white, small, perfect, regular, and arranged in a spike-like raceme with distinct petals that occur in fours or fives. Fruits are a capsule with many, many, many seeds that have feathery hairs.

Ecology: Found just about anywhere, but particularly along any disturbed riparian area below 5,000 feet. Flowers between January and October.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Tamarix+ramosissima&formsubmit=Search+Terms>

Siberian Elm



Photo Credit: Daneil Atha (left), Sue Carnahan (middle), and Max Licher (right) via SEINet Arizona – New Mexico Chapter

Scientific Name: *Ulmus pumila*

Family: Elms (Ulmaceae)

Duration: Perennial

Nativity: **Non-Native**

General Description: Deciduous tree growing 15-30 meters tall with an open crown, and slender twigs. Hairy and gray-green when young and becoming glabrous and gray-brown with age. Buds are ovoid, about 2 cm long, dark-brown to reddish gray, and glabrous with scales that are light brown, shiny, smooth or slightly hairy. Leaves are alternate, simple, and narrowly elliptic to lanceolate growing to be 2-6.5 cm long and 2-3.5 cm wide. Leaves are dark green and glabrous above and paler green and with hairy veins below. Leaf margins are serrate and slightly asymmetrical at the base. Inflorescence is a fascicle of 6-15 tightly clustered greenish flowers. Fruits are a rounded to ovate samara that is pale green becoming yellow-cream to tan with age and glabrous.

Ecology: Found cultivated, escapes and established along roadsides, hedgerows, along streams, and disturbed habitats up to 7,500 feet. Flowers from March – April.

More Information and Photos: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=Ulmus+pumila&formsubmit=Search+Terms>

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Nativity Color Codes: **Green** = Native, **Yellow** = Non-Native, **Red** = Non-Native/Target Species for Treatment

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**Summary of AMAFCA's MS4
Post-Construction Stormwater Management Program
FY 2021 (July 1, 2020 – June 30, 2021)**

NPDES Permit No. NMR04A000

Part I.D.5.b - Post-Construction Stormwater Management in
New Development and Re-development

Post-construction stormwater runoff is the stormwater that would flow from a project site to the Municipal Separate Storm Sewer System (MS4) after completion of a new development or redevelopment (not during the project construction). Controls for this type of runoff are necessary to maintain or restore stable hydrology in receiving waters by limiting surface runoff rates and volumes and reducing pollutant loadings from sites that undergo development or significant redevelopment.

Post-construction stormwater management in areas undergoing new development or redevelopment is necessary because runoff from these areas has been shown to significantly affect receiving water bodies. The intent of the Post-Construction Stormwater Management requirements in the MS4 Permit, according to EPA, are to:

- Prevent or reduce pollutants in stormwater discharges from reaching the Rio Grande;
- Mimic predevelopment hydrology; and
- Reduce impacts on natural channels and flow paths due to changes in hydrology.

AMAFCA, in conjunction with the area MS4 through the Mid Rio Grande Stormwater Quality Team, completed a review and recommendations memo for post-construction stormwater quality design standards in the Middle Rio Grande Watershed in April 2021 (final memo is attached). Currently, the Middle Rio Grande MS4 permittees approach the stormwater quality design standard slightly differently.

The Post-Construction Stormwater Quality Volume (SWQV) Comparison Tool was created as part of this task to assist the MRG MS4 permittees with comparing the stormwater quality design standards used within the MRG watershed related to post-construction stormwater management. It was recommended that developers be encouraged to include green stormwater infrastructure (GSI) and low impact development (LID) as well as increased landscape areas to reduce the total impervious area of a site, thereby reducing the required SWQV. It was also recommended that water quality and detention inspections include a review of the original impervious area used in the SWQV calculation to ensure that site modifications have not increased the impervious area of a site. The extent of the application and/or adoption of these recommendations for post-construction stormwater quality design standards and inspections will be determined and implemented by each MS4 permittee. Based on analysis from this document and discussions with New Mexico Environment Department (NMED) and EPA, Bernalillo County issued a memorandum on May 12, 2021, that within 30 calendar days, all new development and redevelopment projects that disturb equal to or greater than 1 acre or are part of a larger common

plan of development, will be required to use the rainfall depth to calculate the SWQV for impervious areas (including compacted areas) – this is available on the Bernalillo County website: https://www.bernco.gov/public-works/wp-content/uploads/sites/76/2021/05/SWQV_Calculation_memo_051221_encrypted.pdf

AMAFCA's Drainage Management Plans (DMPs) calculate flood protection and water quality volumes for a given subwatershed's facilities that can accommodate the SWQV independent of the rainfall/runoff numbers used to calculate required on-site retention. AMAFCA's planning documents comply with the MS4 Permit by limiting the discharge from within a subwatershed to the pre-development flow condition. AMAFCA's facilities are designed to attenuate the runoff from a storm event such that the river's flow conditions are essentially unaffected by new development and/or redevelopment.

AMAFCA's development engineer participates in area development reviews and often has the opportunity to comment on and request water quality components for projects. In addition, the AMAFCA Stormwater Quality Engineer participates in reviews subdivision reviews completed by Ciudad Soil and Water Conservation District, in accordance with their authority [47-6-11(F)(4) NMSA]. These reviews often cross-check with area terrain management plans and focus on post-construction runoff quantity, stormwater retention ponds, GSI/LID options, post-construction velocities, and maintenance requirements.

The AMAFCA Project schedule identifies future planning efforts, joint funding initiatives, and design and construction projects that AMAFCA hopes to accomplish over the next six years. Planned stormwater quality projects are prioritized as required by the MS4 Permit. The prioritization assists AMAFCA and its Board of Directors in its mission to protect life and property. Projects subject to this scoring have a strong affinity towards water quality improvements, however, projects included in the Project Schedule which are not scored for water quality may still include water quality aspects as part of their scope. This figure below provides a summary of the scoring criteria used for water quality facilities.

Total project cost will ultimately determine the feasibility of a proposed project. As such, projects will be scored based on their total estimated project cost. The point scale below describes how points are assigned based on total project cost.

Total Cost	Points
Less than \$500K	2
Greater than \$500K but less than \$1M	1
Greater than \$1M	0

Location along a flow path to the Rio Grande is taken into consideration when assigning points to each project. Projects are scored higher if they are the only stormwater quality facility along the flow path to the Rio Grande, and lower if there is a facility(ies) above or below the proposed project. The point scale below describes points are assigned based on this location.

Flow path to the Rio Grande	Points
Project only WQ Facility	3
Project downstream of existing WQ Facility	1
Project Upstream of existing WQ Facility	1

If a stormwater quality facility is located within the Bosque - the forested area surrounding the riparian zone of the Rio Grande floodplain - the project was awarded a "bonus" for being the ultimate water quality control measure before stormwater reaches the Rio Grande. The point scale below describes how the bonus points were assigned based on the above criteria.

"Bosque Bonus"	Points
Within Bosque	2
Not Within Bosque	0

Total Points Scale: 1-7

AMAFCA Project Schedule Water Quality Facility Scoring Criteria

In addition, AMAFCA has been a supporter of the annual Land and Water Summit in the Albuquerque area. The Land and Water Summit was created in 1986 by the Xeriscape Council of New Mexico. Developed to bring together design professionals, construction and management companies, agencies, farmers, artists, teachers, hydrologists, ranchers, climatologists, wildlife advocates, homeowners, and policy makers to find sustainable ways to protect and share our state's water and resources, the event is now hosted by Ciudad Soil and Water Conservation District, which serves as the event's fiscal agent. The group's primary goal is to educate the public about resource conservation and best practices for improving and protecting local landscapes – which ties well with the MS4 Post-Construction Stormwater Management education requirements. AMAFCA has been a financial sponsor as well as an active member on the planning committee. For information on the 2022 Land and Water Summit, please visit the conference website: <https://www.landandwatersummitnm.org/>



**An
Evolving
Climate:** *frameworks for
sustainability
and social inclusion*

A VIRTUAL CONFERENCE

February 23-26, 2021

2021 Virtual Land and Water Summit Program Cover



June 9th, 2021

Dear Albuquerque Metropolitan Arroyo Flood Control Authority,

On behalf of the Land and Water Summit Planning Committee, Ciudad Soil & Water Conservation District would like to take this opportunity to thank you for the generous sponsorship in the amount of \$2,000 that was provided for the 2021 Land and Water Summit Virtual Conference. As the fiscal manager for the Land and Water Summit, Ciudad SWCD is gratified to report that the AMAFCA's charitable river sponsor contribution assisted with the planning efforts and implementation of the virtual conference.

Through the AMAFCA's sponsorship, the Land and Water Summit hosted 172 attendees, 12 speakers, and 3 separate facilitated speaker discussions.

The 2021 Land and Water Summit raised awareness about positive frameworks for environmental change and science communication, urban environmental integration, as well as plants and pollinator for a changing climate.

The Land and Water Summit annual conference is vital in the Middle Rio Grande valley in order to provide continuing education about resource conservation and best practices for improving and protecting local landscapes. The event could not be possible without the AMAFCA's financial contribution. The Land and Water Summit Planning Committee and Ciudad SWCD deeply appreciate your willingness to support and sponsor the event.

Sincerely,

J. Steven Glass
Land and Water Summit Planning Committee
Ciudad Soil & Water Conservation District, Board Chair

2021 Land and Water Summit Sponsorship from AMAFCA

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MEMORANDUM

DATE: April 21, 2021

TO: Mid Rio Grande Stormwater Quality Team

FROM: Sarah Ganley, PE

SUBJECT: **Review and Recommendations for Post-Construction Stormwater Quality Design Standards in the Middle Rio Grande Watershed**

Land development changes the hydrologic properties of a given watershed and generally increases the pollutant load transported by runoff compared to predevelopment conditions. The term stormwater quality volume (SWQV) is generally used to define the amount of stormwater from any given storm that should be captured and treated in order to remove a majority of stormwater pollutants on an average annual basis before it is transported to receiving waters. Since the majority of all rainfall typically occurs in relatively small events, managing the discharge of the SWQV is considered to be a cost-effective standard for minimizing overall pollutant discharge to receiving waters.

The goals of this task related to the post-construction stormwater quality design standards are to:

- 1) Improve the MS4 permittees understanding of the various post-construction stormwater quality design standards in the Middle Rio Grande watershed.
- 2) Review the intent of the Middle Rio Grande Watershed Based (MRG WSB) MS4 Permit, Permit No. NMR04A000, Dec. 19, 2019, and related reference documents associated with post-construction runoff values.
- 3) Consider the equity of the application of differing post-construction stormwater quality design standards within the watershed.
- 4) Assist the MS4 permittees in preparing for the next MRG WSB MS4 Permit related to post-construction requirements.

The intent of the Post-Construction Stormwater Management requirements in the MRG WSB MS4 Permit, according to EPA, are to:

- Prevent or reduce pollutants in stormwater discharges from reaching the Rio Grande;
- Mimic predevelopment hydrology; and
- Reduce impacts on natural channels and flow paths due to changes in hydrology.

The literature review for this task provided multiple explanations of the purpose of using percentile storms to define and simplify a stormwater quality design standard. The quotes shown below are examples that explain that creating a stormwater quality design standard that maintains on site the 90th percentile storm event (new development) and 80th percentile storm event

(redevelopment) reasonably mimics predevelopment hydrology and addresses watershed water quality concerns.

“This permit proposes a **simple stormwater quality design standard** to ensure the hydrology associated with new development and redevelopment sites mirror the predevelopment hydrology of the previously undeveloped site.”

-- Fact Sheet and Supplemental Information for the NPDES General Permit for
Municipal Separate Storm Sewer Systems in the Middle Rio Grande Watershed –
December 2014

“...predevelopment condition in the regulated MS4 area of the watershed is defined as the **rainfall depth above which measurable runoff first occurs under natural conditions.**”

*-- Estimating Predevelopment Hydrology in the Middle Rio Grande Watershed, NM,
April 2014, Kosco, et. al.*

“...the performance standard to capture the 90th percentile storm event...is a **reasonable surrogate for mimicking predevelopment hydrology** for this watershed. Managing stormwater to predevelopment runoff conditions **will reduce water quality impacts on the receiving water.**”

*-- Estimating Predevelopment Hydrology in the Middle Rio Grande Watershed, NM,
April 2014, Kosco, et. al.*

The post-construction predevelopment hydrology requirements in the MRG WSB MS4 Permit are met by agencies by defining a stormwater quality design standard. Post-Construction Part I.D.5 b.(ii).(b) of the MRG MS4 Permit states: "Incorporate a stormwater quality design standard that manages on-site the 90th percentile storm event discharge volume associated with new development sites and 80th percentile storm event discharge volume associated with redevelopment sites, through stormwater controls that infiltrate, evapotranspire the discharge volume,...". In predeveloped conditions, the 90th percentile storm represents the rainfall when runoff would first occur.

The MRG MS4 permittees approach the stormwater quality design standard slightly differently. There are three main components that factor into the application of a stormwater quality design standard.

- 1) The rainfall depth values.
- 2) Use of the rainfall depth or a reduced runoff depth in the stormwater quality design standard.
- 3) Area of the site to which the rainfall (or runoff) depth is applied. Some stormwater quality design standards apply this only to the impervious areas, some to all disturbed area, and others to the entire site.

The Post-Construction Stormwater Quality Volume (SWQV) Comparison Tool was created as part of this task to assist the MRG MS4 permittees with comparing the stormwater quality design standards used within the MRG watershed related to post-construction stormwater management. The Post-Construction SWQV Comparison Tool literature review research and findings were shared with the Mid Rio Grande Stormwater Quality Team (MRGSQT) in a virtual meeting on October 20, 2020. Review and feedback on the information and each agency's specific stormwater quality design standard was requested. Bernalillo County provided feedback to BHI and AMAFCA regarding the meeting, SWQV Comparison Tool, and agency stormwater quality design standards.

Figure 1 below illustrates the rainfall and runoff depths that are generally agreed to in the MRG Watershed. Table 1 on Page 4 provides a summary of the MRG watershed rainfall depths and the runoff depths, if applicable, with additional details and related references available in the SWQV Comparison Tool. Currently, there is fairly consistent consensus in the watershed on the rainfall depth value and a lack of consensus on if the rainfall depth or reduced runoff depth should be used in a stormwater quality design standard.

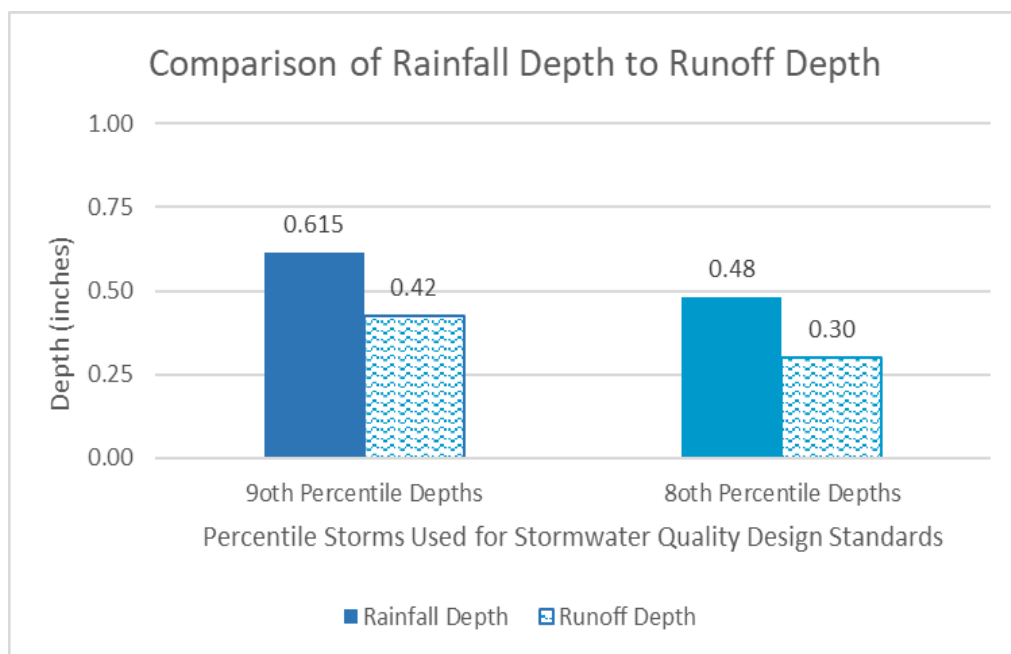


Figure 1: Comparison of Rainfall and Runoff Depths in the MRG Watershed

Table 1: Comparison of Rainfall Depths and Runoff Depths Used Within the MRG Watershed Related to Post-Construction Stormwater Management

Agency/Reference	New Development		Redevelopment	
	90th Percentile Storm Rainfall Depth	90th Percentile Storm Runoff Depth	80th Percentile Storm Rainfall Depth	80th Percentile Storm Runoff Depth
EPA, Estimating Predevelopment Hydrology in the Middle Rio Grande Watershed, NM, April 2014	0.615"	0.42"	Not stated - 0.48" directed by EPA (Nelly Smith - email included in Attachment to Memo)	Not stated - Calculated runoff value using TR-55, Rainfall depth = 0.48", CN of 98 (impervious) = 0.3"
EPA, Estimating Predevelopment Hydrology in New Mexico, 2015	0.65"	Not stated	0.48"	Not stated
City of Albuquerque, 2017 Memo (marked Draft) - Determination of 80th and 90th Percentile Storms for Stormwater Quality Volume	0.62"	0.42"	0.44"	0.26"
City of Albuquerque, DPM, June 8, 2020	0.62"	0.42"	0.48"	0.26"
Bernalillo County, Ordinance, Chapter 28, Article IV - Stormwater Quality	0.615"	County references 2014 predevelopment document	County references 2014 predevelopment document	County references 2014 predevelopment document
Bernalillo County, Technical Standards Document, currently being developed	0.615"	0.615"	0.48"	0.48"
SSCAFCA, DPM, Section 10, Stormwater Pollution Control	0.6"	0.46"	Not stated	Not stated
City of Rio Rancho, Ordinance, Chapter 153 - Erosion Control; Storm Drainage and Stormwater Quality	0.615"	CORR references 2014 predevelopment document	Not stated	Not stated
NMDOT, Drainage Design Manual, July 2018	0.615"	0.615"	0.48"	0.48"

The stormwater quality design standard is typically a SWQV calculation, which is a straightforward calculation:

$$\text{SWQV} = (R/12) * \text{Area} = \text{stormwater quality volume to be treated, in cubic feet}$$

R = 90th or 80th percentile event rainfall depth, in inches
Area = area of development or redevelopment, in square feet

To understand the magnitude of the impact of using the storm rainfall depth versus the reduced runoff depth in the stormwater quality design standard volume calculation, sample calculations were performed to demonstrate that use of the runoff depth leads to 69-percent lower volume requirements for the 90th percentile storm and 62-percent lower volume requirements for the 80th percentile storm. Figure 2 below illustrates this runoff volume reduction. The New Mexico Environment Department (NMED) Surface Water Quality Bureau shared that the use of the rainfall depth in the SWQV calculation was the intent of the language in the MRG WSB MS4 Permit (email documentation provided as an attachment to this memo).

The area used in the SWQV calculation also has an impact on the magnitude of water quality volume required. The SWQV calculation providing protection to the environment to the maximum extent practicable would apply the rainfall depth over the entire site. At the other end of the spectrum, the SWQV calculation providing protection to the environment to something less than the maximum extent practicable applies the reduced runoff depth to only the impervious areas of a given site. Using the impervious areas to calculate the SWQV is the current, standard practice in much of the MRG watershed. This current approach functions to encourage developers to include green stormwater infrastructure (GSI) and low impact development (LID) as well as increased landscape areas which would reduce the total impervious area of a site, thereby reducing the required SWQV. Compacted or disturbed areas may also be considered in the SWQV calculation if the agency reviewer has concerns about the stormwater quality runoff from these areas.

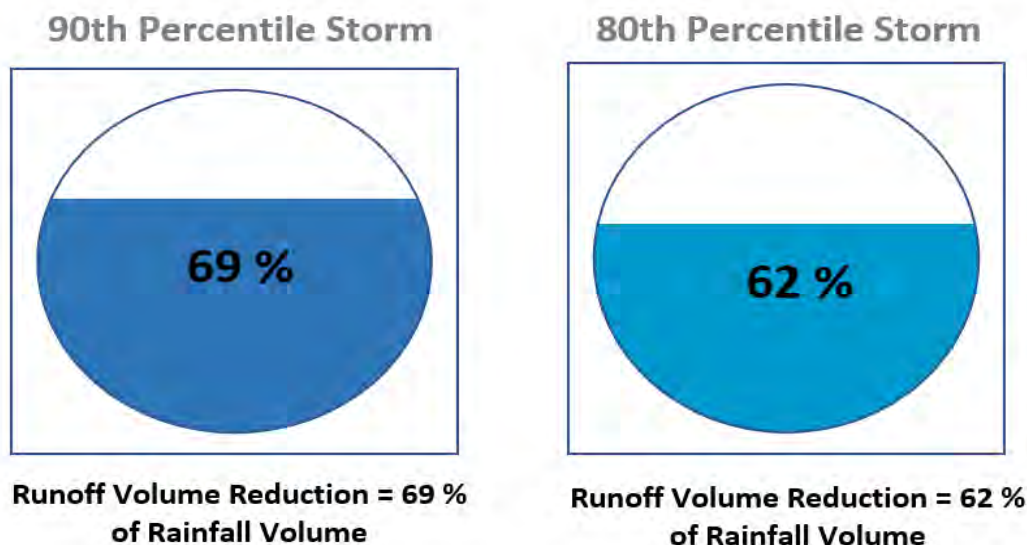


Figure 2: Comparison of Volumes if Using Rainfall and Runoff Depths Recommendations

Based on this literature review, research, and collaborative discussions, use of the rainfall depth in stormwater quality design standards is recommended for site development in the MRG watershed as the most protective standard for water quality. Rainfall depth is defined as 0.615" for the 90th percentile storm event for new development, and 0.48" for the 80th percentile storm event for redevelopment. Use of the runoff depth in stormwater quality design standards is used in the MRG, and it is a reduction in SWQV retention compared to use of the rainfall depth, although it does provide some water quality benefits. The MRG WSB MS4 Permit allows for alternative compliance for infeasibility to manage the SWQV on-site due to site constraints (as defined in the Permit), and some or all of the SWQV could be managed at downstream regional, public facilities that are designed for and have agreed to provide for water quality protection, as applicable for such projects. The intent of the MRG WSB MS4 Permit to prevent or reduce pollutants in stormwater discharges from reaching the Rio Grande and retention of the rainfall depth provides the most water quality protection.

The SWQV is recommended to be calculated for the impervious areas of a site. Compacted or disturbed areas may also be considered in the SWQV calculation. It is recommended that developers be encouraged to include green stormwater infrastructure (GSI) and low impact development (LID) as well as increased landscape areas to reduce the total impervious area of a site, thereby reducing the required SWQV. It is also recommended that water quality and detention inspections include a review of the original impervious area used in the SWQV calculation to ensure that site modifications have not increased the impervious area of a site. The extent of the application and/or adoption of these recommendations for post-construction stormwater quality design standards and inspections will be determined, and implemented by each MS4 permittee.

SJG/ab

Attachment 1 – Email Documentation Related to Rainfall Depth for MRG Watershed from EPA and NMED Surface Water Quality Bureau

**ATTACHMENT 1 –
EMAIL DOCUMENTATION RELATED TO RAINFALL
DEPTH FOR MRG WATERSHED FROM EPA AND
NMED SURFACE WATER QUALITY BUREAU**

From: Sarah Ganley [<mailto:sganley@bhinc.com>]
Sent: Wednesday, December 16, 2015 9:13 AM
To: Faidi, Hashem, NMDOT; Morgenstern, Steven, NMDOT
Cc: Barber, Ted L., NMDOT; Trujillo, Timothy R, NMDOT
Subject: FW: 80th & 90th percentile storm values for Albuquerque

Hello— based on Nelly's responses – looks like the values to use for Middle Rio Grande MS4 – for post-construction requirements:

80th percentile storm = 0.48"

90th percentile storm = 0.615"

Thanks,

Sarah J. Ganley, PE
Engineer
Water Resources
Direct line: 505-923-3314

Bohannon Huston

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From: Smith, Nelly [<mailto:Smith.Nelly@epa.gov>]
Sent: Wednesday, December 16, 2015 9:09 AM
To: Sarah Ganley <sganley@bhinc.com>
Cc: Hashem Faidi (Hashem.Faidi@state.nm.us) <Hashem.Faidi@state.nm.us>; Steven Morgenstern (Steven.Morgenstern@state.nm.us) <Steven.Morgenstern@state.nm.us>; Tim Trujillo, PE (TimothyR.Trujillo@state.nm.us) <TimothyR.Trujillo@state.nm.us>; Barber, Ted L., NMDOT (Ted.Barber@state.nm.us) <Ted.Barber@state.nm.us>
Subject: RE: 80th & 90th percentile storm values for Albuquerque

Yes, Table 2-1 of the 2014 Report does not include the 80th percentile value. But Figure 2.6 can be used to extrapolate this value. It is less than 0.5" (as indicated in the Fact Sheet for the MRG MS4 Permit) - 0.48" can be used in the Albuquerque UA.

Thanks!

Nelly Smith
Municipal Stormwater Coordinator
EPA Region 6
Permits and Technical Assistance Section
NPDES Permits and TMDLs Branch

ph: 214-665-7109
Email: smith.nelly@epa.gov

From: Sarah Ganley [<mailto:sganley@bhinc.com>]
Sent: Wednesday, December 16, 2015 8:47 AM
To: Smith, Nelly
Cc: Hashem Faidi (Hashem.Faidi@state.nm.us); Steven Morgenstern (Steven.Morgenstern@state.nm.us); Tim Trujillo, PE (TimothyR.Trujillo@state.nm.us); Barber, Ted L., NMDOT (Ted.Barber@state.nm.us)
Subject: RE: 80th & 90th percentile storm values for Albuquerque

Thanks Nelly –

Based on this – the 90th percentile storm value for the Middle Rio Grande is 0.615”.

The ““Estimating Predevelopment Hydrology in the Middle Rio Grande Watershed, New Mexico, EPA Publication Number 832-R-14-007” does not have an 80th percentile storm value listed – which is a requirement for the post-construction standards. It only has an 85th, 90th and 95th. Is there a specific value you are using for the 80th percentile storm in Albuquerque?

Thanks,

Sarah

From: Smith, Nelly [<mailto:Smith.Nelly@epa.gov>]
Sent: Wednesday, December 16, 2015 7:36 AM
To: Sarah Ganley <sganley@bhinc.com>
Cc: Hashem Faidi (Hashem.Faidi@state.nm.us) <Hashem.Faidi@state.nm.us>; Steven Morgenstern (Steven.Morgenstern@state.nm.us) <Steven.Morgenstern@state.nm.us>; Tim Trujillo, PE (TimothyR.Trujillo@state.nm.us) <TimothyR.Trujillo@state.nm.us>; Barber, Ted L., NMDOT (Ted.Barber@state.nm.us) <Ted.Barber@state.nm.us>
Subject: RE: 80th & 90th percentile storm values for Albuquerque

For purpose of implementing the requirements of the MRG MS4 permit you should use the information in the ““Estimating Predevelopment Hydrology in the Middle Rio Grande Watershed, New Mexico, EPA Publication Number 832-R-14-007”. (p. 28 of Permit).

Both reports used different data set. The 2015 Report states on Pg. 8:

The previous predevelopment runoff study (Kosco, et. al., 2014) used data from the Albuquerque International Airport for the period 1950-2012. Because rainfall data for the other stations studied in this report did not extend back to 1950, this report used the most recent 30 year period of record (1983-2013) for all stations which resulted in a slightly higher 90th percentile event for Albuquerque.

- In terms of implementing the post construction standards in the Albuquerque UA, data should be used from the previous predevelopment runoff study (Kosco, et. al., 2014) or estimated through site specific pre-development hydrology and associated storm event discharge volume using the methodology specified in the 2014 USEPA Technical Report.

Thanks!

Nelly Smith

Municipal Stormwater Coordinator
EPA Region 6
Permits and Technical Assistance Section
NPDES Permits and TMDLs Branch

ph: 214-665-7109
Email: smith.nelly@epa.gov

From: Sarah Ganley [<mailto:sganley@bhinc.com>]
Sent: Wednesday, December 16, 2015 8:19 AM
To: Smith, Nelly
Cc: Hashem Faidi (Hashem.Faidi@state.nm.us); Steven Morgenstern (Steven.Morgenstern@state.nm.us); Tim Trujillo, PE (TimothyR.Trujillo@state.nm.us); Barber, Ted L., NMDOT (Ted.Barber@state.nm.us)
Subject: 80th & 90th percentile storm values for Albuquerque

Hi Nelly – In reviewing the two Pre-development hydrology papers for NM, I am unclear of the 80th & 90th percentile storm values for Albuquerque.

“Estimating Predevelopment Hydrology for Urbanized Areas in New Mexico”, Tetra Tech, March 2015 – has 0.48” for 80th and 0.65” for 90th

“Estimating Predevelopment Hydrology in the Middle Rio Grande Watershed”, NM, Tetra Tech, April 2014 – does not have a 80th percentile storm event listed & the 90th percentile = 0.615”

The MRG MS4 Permit NMR04A000 specifically references this report: “Estimation of the 90th or 80th percentile storm event discharge volume is included in EPA Technical Report entitled *“Estimating Predevelopment Hydrology in the Middle Rio Grande Watershed, NewMexico, EPA Publication Number 832-R-14-007”*. (p. 28 of Permit).

I appreciate you help in clarifying these values for the Middle Rio Grande area.

Thanks,

Sarah J. Ganley, PE
Engineer
Water Resources
Direct line: 505-923-3314

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From: Holcomb, Sarah, NMENV <sarah.holcomb@state.nm.us>

Sent: Friday, April 16, 2021 8:30 AM

To: Patrick Chavez <pchavez@amafca.org>; Kali Bronson <kbronson@bernco.gov>; Sarah Ganley <sganley@bhinc.com>

Cc: Dean, Levi, NMENV <Levi.Dean@state.nm.us>; Gatterman, David <dgatterman@sscafca.com>; Burrell, Monica <Burrell.Monica@epa.gov>; smith.nelly@epa.gov

Subject: RE: Stormwater quality volume calculation

Hi all,

Good morning! Yes, I do believe **the intent behind the calculation was to use the rainfall amount rather than the runoff amount**. Forgive me for not having the time to write an in-depth summary today, but obviously Monica and Nelly can provide you further feedback, if needed.

I hope you all have a great weekend - Be well and hopefully our paths will cross again in the future!

Sarah Holcomb

PSRS Program Manager

Office: **505-819-9734** ← NOTE NEW PHONE NUMBER

From: Patrick Chavez <pchavez@amafca.org>

Sent: Thursday, April 15, 2021 3:04 PM

To: Holcomb, Sarah, NMENV <sarah.holcomb@state.nm.us>; Kali Bronson <kbronson@bernco.gov>; Sarah Ganley <sganley@bhinc.com>

Cc: Dean, Levi, NMENV <Levi.Dean@state.nm.us>; Gatterman, David <dgatterman@sscafca.com>

Subject: [EXT] RE: Stormwater quality volume calculation

Hi Sarah:

Just a quick note to follow up on the below email discussion.

After communicating with a few TAG folks we thought it would be a good idea to at least try to memorialize in some fashion your "institutional knowledge" on the below issue of rainfall/runoff. I recall you sharing with most of this email group on a previous zoom call that you recalled the intent (protection to the greatest extent practicable) of the watershed based permit writers to be for MS4s to use rainfall and not runoff when calculating the required post construction storm water quality volume. Is that correct in terms of your understanding of the intent of the calculation?

Sorry to put you on the spot before you leave NMED for your awesome new job. It's just that you truly are one of a kind; and your insights relative to the intent of EPA's permit writer(s) are of great value to the watershed's MS4s.

Thanks again and take care,
Patrick

Patrick Chavez, MSCE, PE, LEED AP+
Storm Water Quality Engineer
Albuquerque Metropolitan Arroyo Flood Control Authority
2600 Prospect NE
Albuquerque, New Mexico 87107

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**Summary of AMAFCA's MS4
Pollution Prevention/Good Housekeeping Program
& Control of Floatables Program
FY 2021 (July 1, 2020 – June 30, 2021)**

NPDES Permit No. NMR04A000

Part I.D.5.c - Pollution Prevention/Good Housekeeping for Municipal/Co-permittee Operations
and Part I.D.5.f - Control of Floatables Discharges

AMAFCA, from its elected Board to its Executive Engineer to its maintenance crew, prioritizes the maintenance, operations, and aesthetics of its facilities. As a result, pollution prevention, good housekeeping, and control of floatables are inherent to AMAFCA activities and are part of the AMAFCA culture. With AMAFCA being a non-traditional Municipal Separate Storm Sewer System (MS4), its pollution prevention and good housekeeping program differs from other MS4s in the community in that its program extends throughout the watershed rather than focusing primarily on industrial-type facilities. In accordance with AMAFCA's Stormwater Management Program (SWMP), AMAFCA has followed and will continue to follow its program practices outlined in the programs' strategies and procedures to reduce pollutant runoff from AMAFCA operations. AMAFCA's pollution prevention, good housekeeping, and control of floatables practices pertain to all AMAFCA facilities.

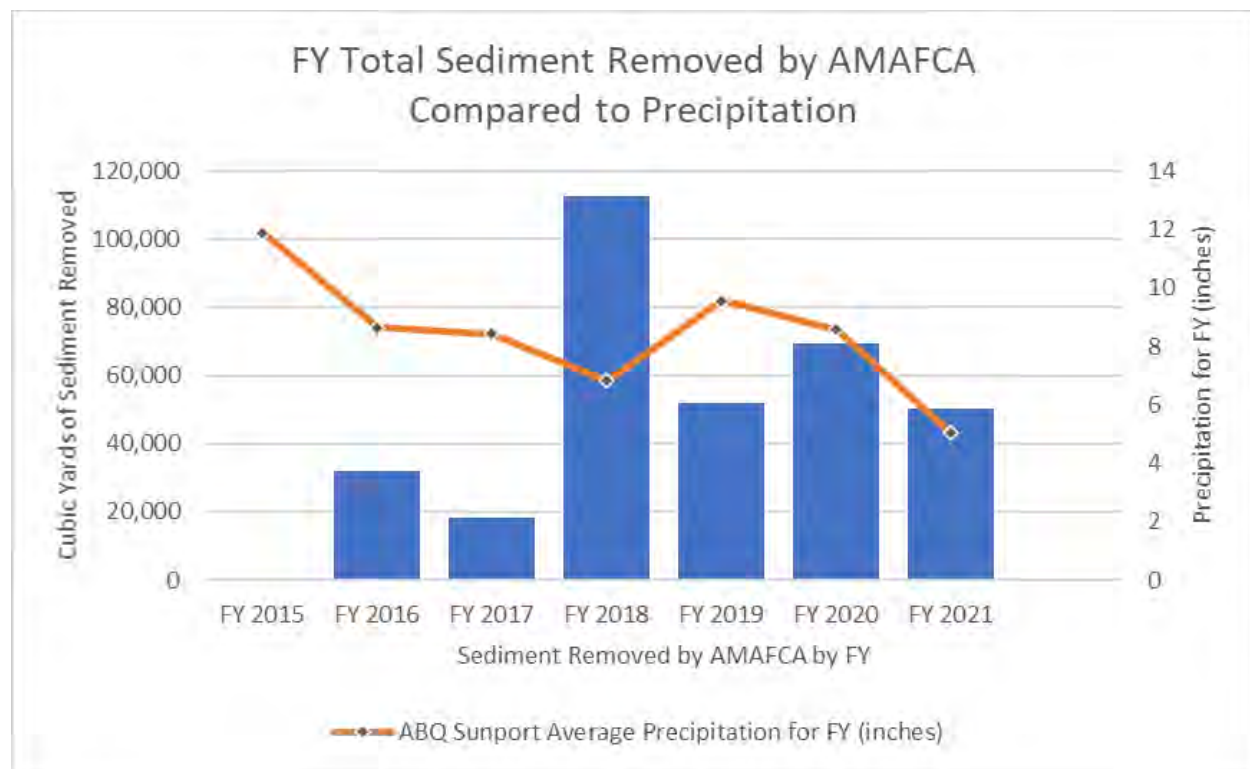
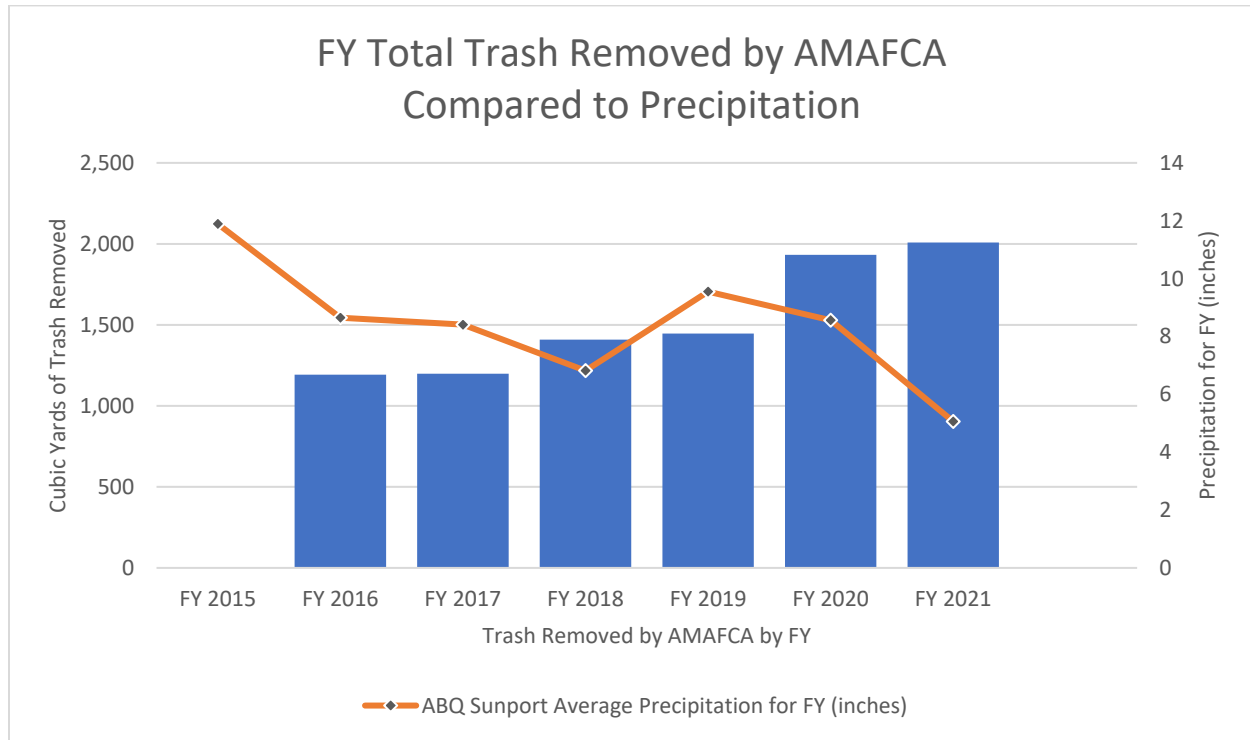
For example, as part of this MS4 Program and through regular business operations, AMAFCA conducts regular inspections and maintenance throughout the watershed for infrastructure that includes 21 flood control dams, 50 smaller flood-control ponds, 77 miles of arroyo channels, 11 miles of underground conduit structures, and 10 miles of dikes and diversion structures. Related to infrastructure, AMAFCA has become a regional leader in integrating flood control infrastructure and stormwater quality facilities. AMAFCA stormwater quality and debris removal facilities annually collect an average of 55,000 cubic yards of sediment and 1,500 cubic yards of trash/floatables from stormwater before the runoff enters the Rio Grande. The Watershed Based MS4 Permit has an additional minimum control measure (MCM) from the typical six MCMs in MS4 Permits that focuses on the control of floatables. Control of floatables ties into pollution prevention and good housekeeping measures and is another area where AMAFCA programs have a widespread, positive impact to the watershed.

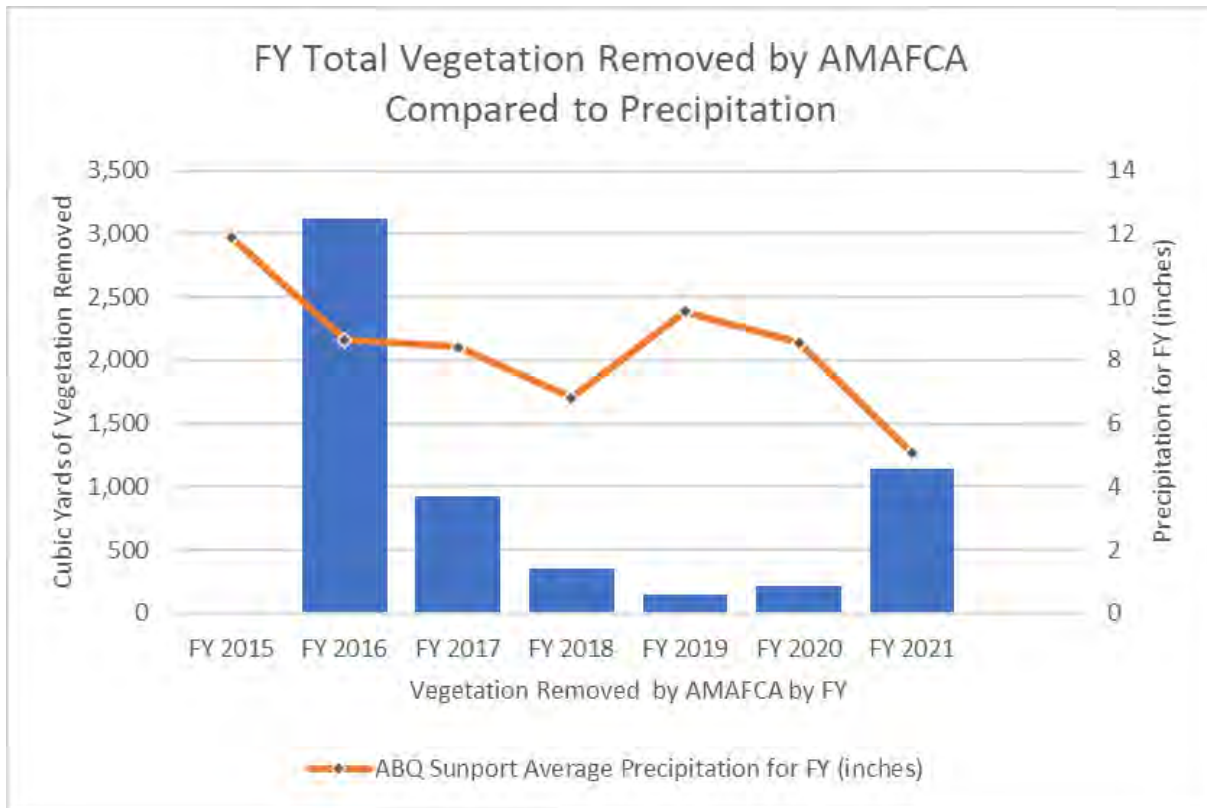
AMAFCA utilizes a detailed crew tracking system to document the AMAFCA crew maintenance and operations activities, many of which support these MS4 Program activities. The tracking includes a list of all AMAFCA facilities, organized by drainage basin. The photos and graphs below highlight the watershed-wide trash, debris, and sediment removed by AMAFCA operations.



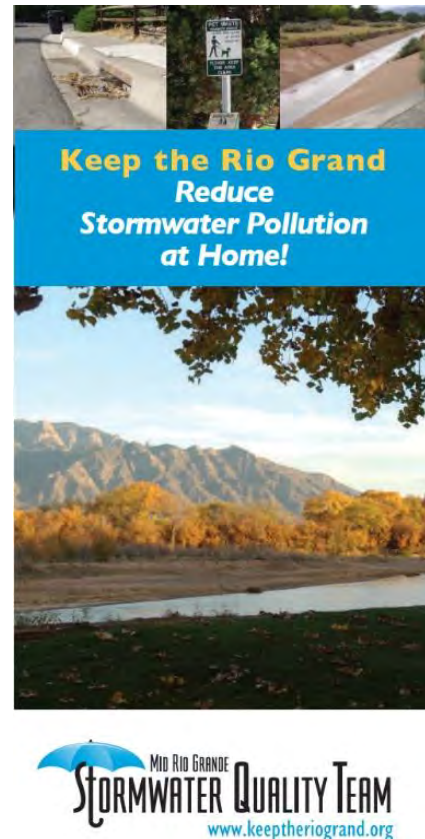
Capturing pollutants in AMAFCA facilities before they enter the Rio Grande

Graphs Highlighting the Watershed Wide Trash, Sediment, and Vegetation Removed by AMAFCA Operations.





These two MS4 programs require a litter source control program, including a public awareness campaign and employee training. AMAFCA is a member of the Mid Rio Grande Stormwater Quality Team (MRGSQT – <https://keeptheriogrand.org/>), which has grown to 12 organizations who leverage their resources to ensure MS4 Permit public education and outreach requirements are met with the goal of preventing and reducing stormwater pollution throughout the watershed from reaching the Rio Grande. AMAFCA will continue to collaborate with the MRGSQT and MS4 permittees for the existing litter source control program, including a targeted public awareness campaign as well as coordinated training programs


















MRGSQT Outreach Examples – Kiosk and Brochure


AMAFCA is also a partner in the watershed's Illegal Dumping Partnership (IDP), a multi-agency task force founded to help combat illegal dumping (<https://www.ihavetrash.com/> and <https://www.bernco.gov/planning/let-s-talk-trash-.aspx>). The table below provides a summary of the outreach and activity completed by the IDP Awareness Campaign in FY 2021.

Summary of FY 2021 Illegal Dumping Awareness Campaign

Activity	Measurement
I Have Trash.com website views	470
YouTube videos views	3,505
Radio spots (June 21-30, 2021)	198
TV video commercials	180
Billboards (June 21 - July 1, 2021)	5
Cleaned up trash at illegal dumped sites	297
NM Clean & Beautiful grants	\$23,143
Outreach & media budget	\$59,933

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ILLEGAL DUMPING PARTNERSHIP

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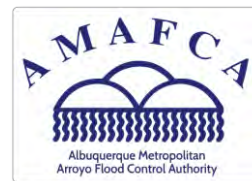
SOCIAL MEDIA

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Screen Shot from IDP Website

Annual Report Page 548

7



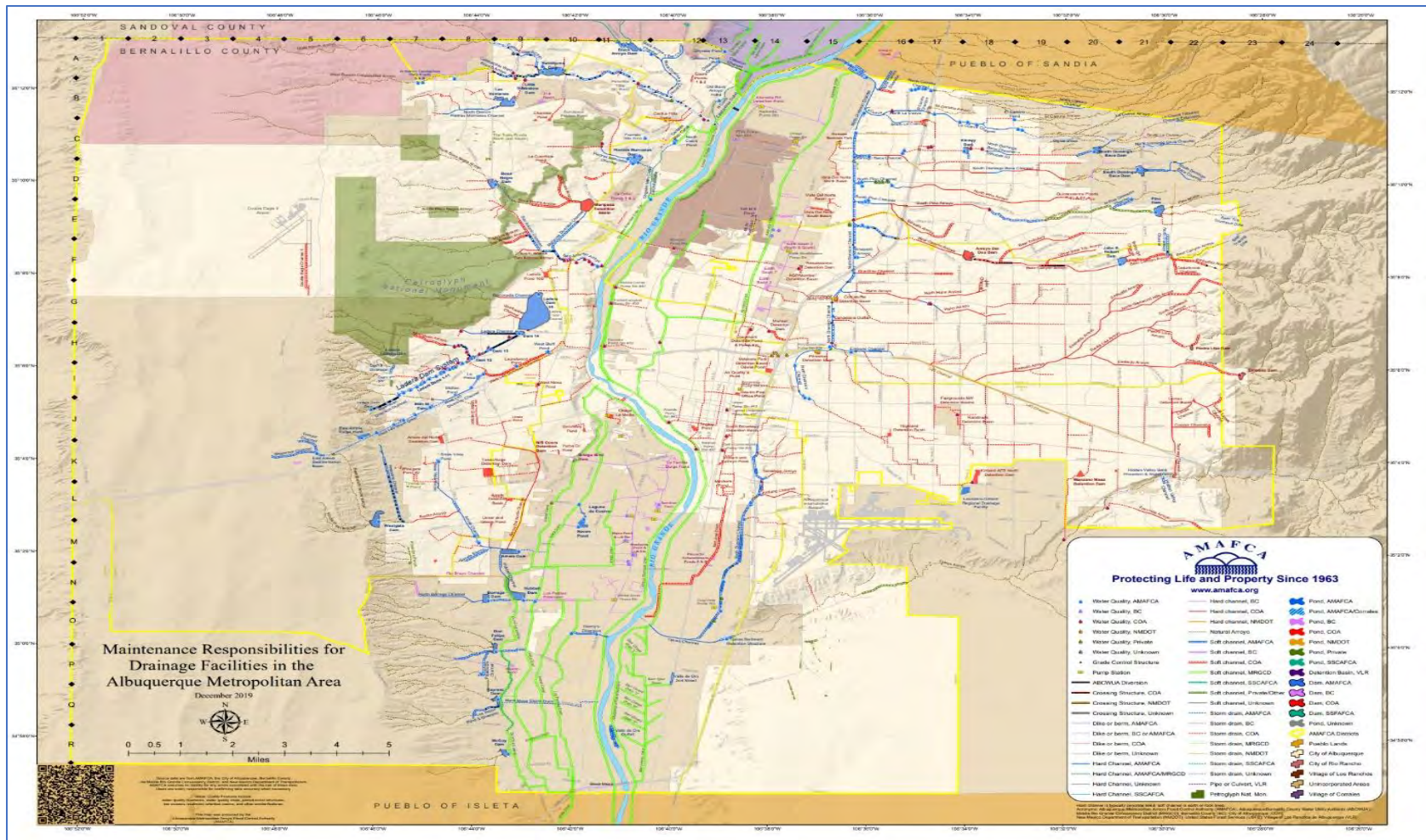
**Summary of AMAFCA's MS4
Illicit Discharges and Improper Disposal Program
FY 2021 (July 1, 2020 – June 30, 2021)**

NPDES Permit No. NMR04A000

Part I.D.5.e - Illicit Discharge and Improper Disposal

AMAFCA's successful Illicit Discharge and Improper Disposal Control Program depends on strong collaborative programs and community relationships, as well as AMAFCA's commitment to addressing illicit discharges. AMAFCA has teamed with the City of Albuquerque on its 311 Community Contact Center hotline (includes website and phone app) for reporting illicit discharges. All AMAFCA staff are trained to address illicit discharge reports. AMAFCA has created forms and procedures for this program, as well as has provided staff education. In accordance with AMAFCA's SWMP, AMAFCA has and will continue to follow its program practices outlined in the program's strategies and procedures, to detect and eliminate illicit discharges.

This program uses GIS to track illicit discharge reports and identify areas of concern where additional public outreach and education may be needed. AMAFCA is the leader in the watershed for its Maintenance Responsibilities for Drainage Facilities in the Albuquerque Metropolitan Area. The map below represents facilities throughout the Albuquerque Metropolitan Area for multiple agencies and is essential for ensuring that proper organizations are contacted and involved in any illicit discharge reports, assessment, removal, and/or enforcement.





AMAFCA's Maintenance Responsibilities for Drainage Facilities in the Albuquerque Metropolitan Area Map
https://amafca.org/documents/Maintenance_Map.pdf

AMAFCA also continuously looks for opportunities to add dry weather screening to assist with identifying potential illicit discharges to its numerous projects, leveraging opportunities where staff or consultants are already out in the field. AMAFCA has the added benefit of professional on-staff maintenance crew members who are working throughout their jurisdiction and are equipped and educated to detect illicit discharges.

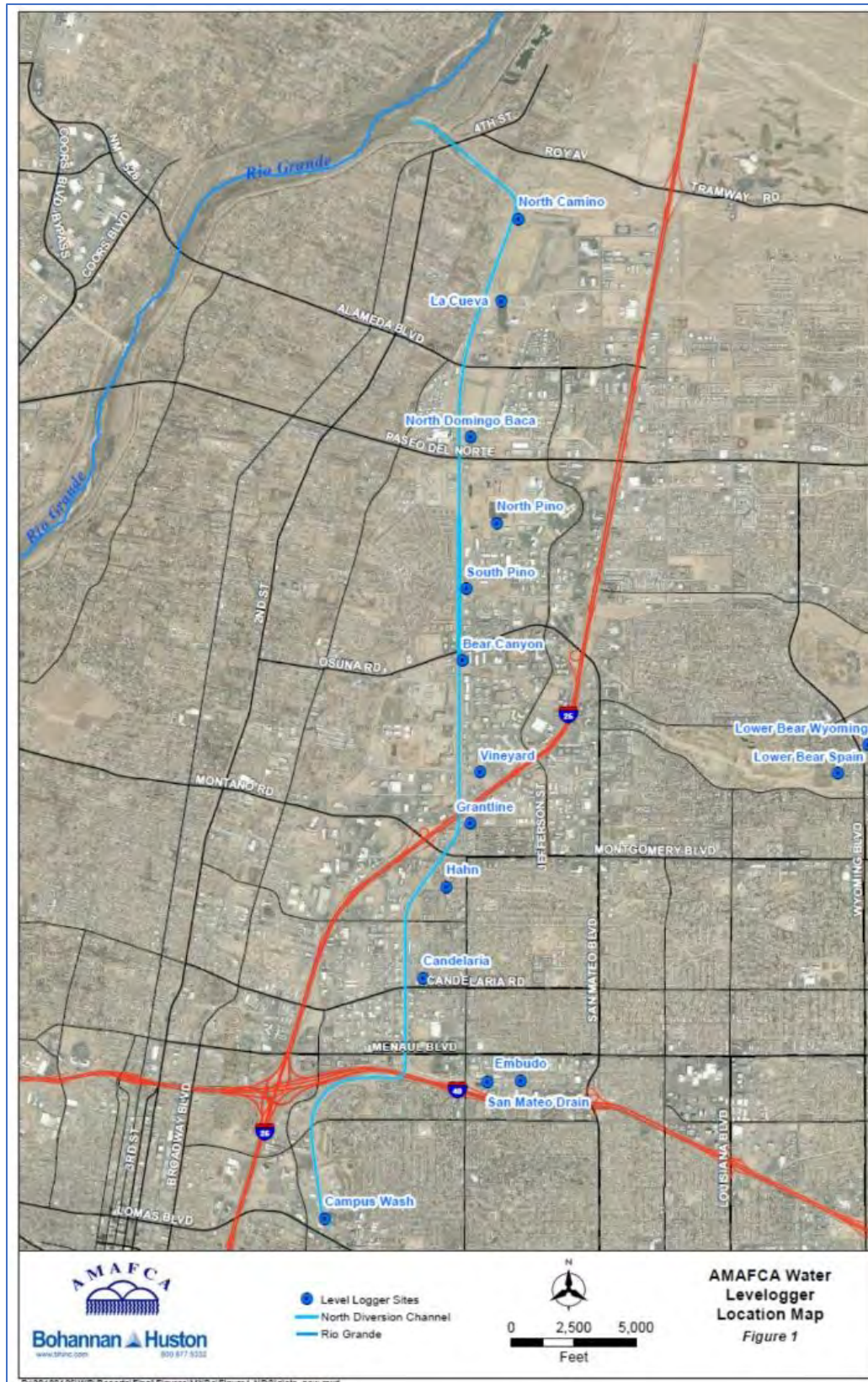
As an example, AMAFCA's Levellogger flow monitoring in 13 arroyos contributing stormwater runoff to the North Diversion Channel also includes an illicit discharge monthly screening component. The graphics below highlight the Levellogger locations and program visual screening tracking, locations, and photos.

AMAFCA Channel Near Outfall to NDC	Number of Visual Screenings – FY 2021 July 2020 – June 2021												Cumulative Total of Visual Screenings Completed During Task
	July 2020	August 2020	September 2020	October 2020	November 2020	December 2020	January 2021	February 2021	March 2021	April 2021	May 2021	June 2021	
North Camino Arroyo	1	1	1	1	1	1	1	0	1	1	1	1	11
La Cueva Arroyo	1	1	1	1	1	1	1	0	1	1	1	1	11
North Domingo Baca	1	1	1	1	1	1	1	0	1	1	1	1	11
North Pino Arroyo	1	1	1	1	1	1	1	0	1	1	1	1	11
South Pino Arroyo	1	1	1	1	1	1	1	0	1	1	1	1	11
Bear Canyon Arroyo	1	1	1	1	1	1	1	0	1	1	1	1	11
Vineyard Arroyo	1	1	1	1	1	1	1	0	1	1	1	1	11
Grantline Arroyo	1	1	1	1	1	1	1	0	1	1	1	1	11
Hahn Arroyo	1	1	1	1	1	1	1	0	1	1	1	1	11
Candelaria Channel	1	1	0	0	0	0	0	0	0	0	0	0	2
Embudo Arroyo	1	1	1	1	1	1	1	0	1	1	1	1	11
San Mateo Drain	1	1	1	1	1	1	1	0	1	1	1	1	11
Campus Wash	1	1	1	1	1	1	1	0	1	1	1	1	11
Lower Bear – Upstream (Wyoming)	1	1	1	1	1	1	1	0	1	1	1	1	11
Lower Bear – Downstream (Spain)	1	1	1	1	1	1	1	0	1	1	1	1	11

Levellogger Program Visual Screening Tracking Table for FY 2021

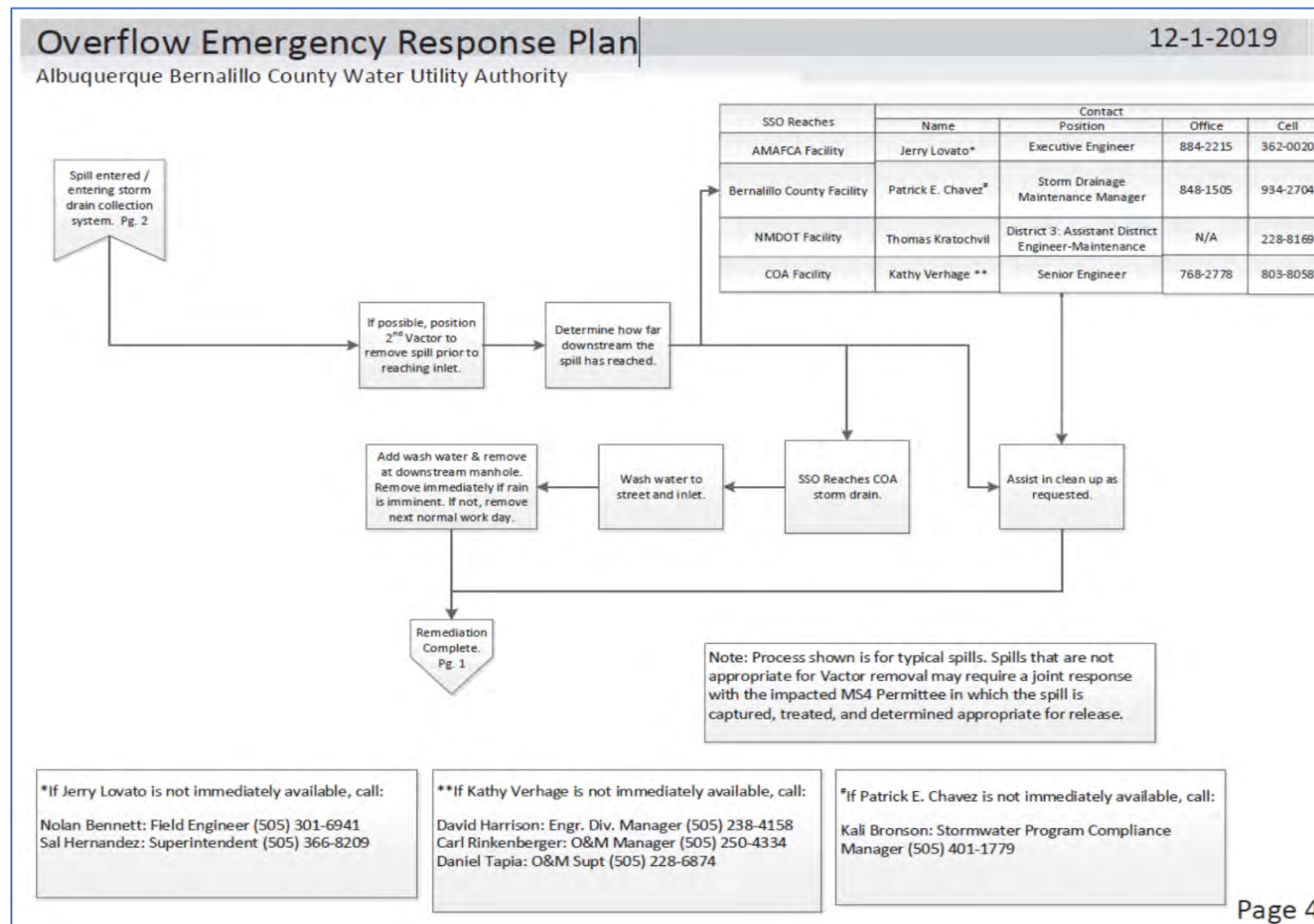
Bear Canyon Arroyo	April 2, 2021	May 7, 2021	June 8, 2021	July 9, 2021
	 A photograph of the Bear Canyon Arroyo looking upstream. The concrete-lined channel is V-shaped, and a metal walkway is visible at the top. The date and time stamp '04/02/2021 12:04' are in the bottom right corner.	 A photograph of the Bear Canyon Arroyo looking upstream. The concrete-lined channel is V-shaped, and a metal walkway is visible at the top. The date and time stamp '04/07/2021 12:00' are in the bottom right corner.	 A photograph of the Bear Canyon Arroyo looking upstream. The concrete-lined channel is V-shaped, and a metal walkway is visible at the top. The date and time stamp '06/08/2021 11:03' are in the bottom right corner.	 A photograph of the Bear Canyon Arroyo looking upstream. The concrete-lined channel is V-shaped, and a metal walkway is visible at the top. The date and time stamp '07/09/2021 10:50' are in the bottom right corner.
	Figure 42: Bear Canyon Arroyo – Looking Upstream	Figure 43: Bear Canyon Arroyo – Looking Upstream	Figure 44: Bear Canyon Arroyo – Looking Upstream	Figure 45: Bear Canyon Arroyo – Looking Upstream
	 A photograph of the Bear Canyon Arroyo looking downstream. The concrete-lined channel is V-shaped, and a bridge is visible in the distance. The date and time stamp '04/02/2021 12:04' are in the bottom right corner.	 A photograph of the Bear Canyon Arroyo looking downstream. The concrete-lined channel is V-shaped, and a bridge is visible in the distance. The date and time stamp '04/07/2021 12:00' are in the bottom right corner.	 A photograph of the Bear Canyon Arroyo looking downstream. The concrete-lined channel is V-shaped, and a bridge is visible in the distance. The date and time stamp '06/08/2021 11:07' are in the bottom right corner.	 A photograph of the Bear Canyon Arroyo looking downstream. The concrete-lined channel is V-shaped, and a bridge is visible in the distance. The date and time stamp '07/09/2021 10:50' are in the bottom right corner.
	Figure 46: Bear Canyon Arroyo– Looking Downstream	Figure 47: Bear Canyon Arroyo– Looking Downstream	Figure 48: Bear Canyon Arroyo– Looking Downstream	Figure 49: Bear Canyon Arroyo– Looking Downstream

Levelogger Program Visual Screening Photo Documentation – Example from Bear Canyon Arroyo



Levellogger Program – Locations of Levelloggers in NDC

Related to collaborative programs and community relationships, AMAFCA coordinates closely with the Albuquerque Bernalillo County Water Utility Authority (ABCWUA) as well as other area agencies, as shown in the ABCWUA's Collection System Overflow Emergency Response Plan (one page included below – full plan available on-line: <https://www.abcwua.org/sewer-system-overview/>). This plan helps ensure that the community responds to and cleans up spills that enter the storm drain collection system.



Page From ABCWUA's Overflow Emergency Response Program

In addition, AMAFCA is a member in the cooperative Municipal Separate Storm Sewer System (MS4) Technical Advisory Group (MS4 TAG) which facilitates cooperation and coordination with other MS4s in the Middle Rio Grande related to the illicit discharge and improper disposal control program. AMAFCA is also a member of the Mid Rio Grande Stormwater Quality Team (MRGSQT – <https://keeptheriogrand.org/>), which has grown to 12 organizations who leverage their resources to ensure MS4 Permit public education and outreach requirements are met with the goal of preventing and reducing stormwater pollution throughout the watershed from reaching the Rio Grande. The MRGSQT provides educational information regarding stormwater quality to the community, including information that facilitates public reporting of illicit connections or discharges and educational programs that inform the public of hazards associated with illicit discharges and improper waste disposal, as well as proper ways to dispose of hazardous wastes.



NPDES Stormwater Permits

- [New Mexico Environment Department \(NMED\)](#)

Hazardous Waste Disposal

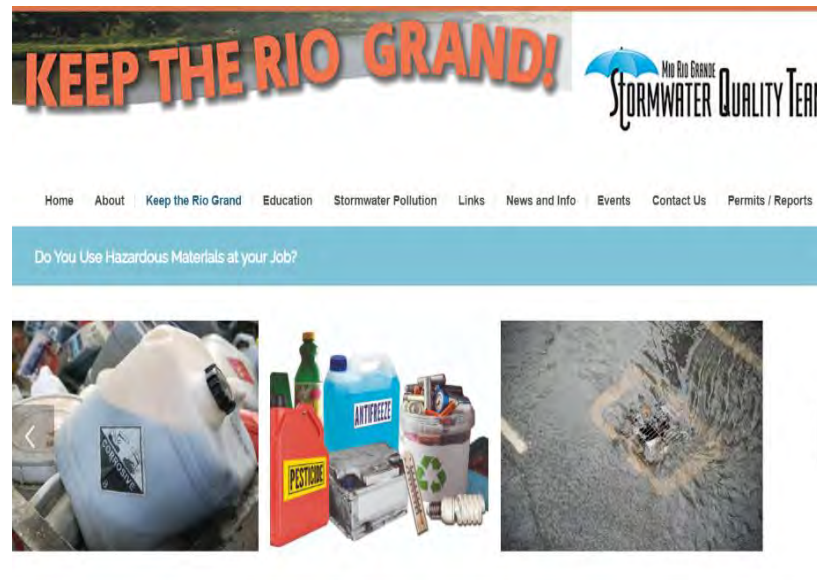
- [City of Albuquerque](#)
- [Bernalillo County](#)
- [City of Rio Rancho](#)
- [Sandoval County](#)
- [Waste Management](#)

Stormwater Pollution Prevention

- [City of Albuquerque](#)
- [Bernalillo County](#)
- [New Mexico Environment Department \(NMED\)](#)
- [City of Rio Rancho](#)

Report Dumping to Storm Drains or Arroyos

- [City of Albuquerque](#)
- [Bernalillo County](#)
- [City of Rio Rancho](#)
- [Sandoval County](#)



Many of us use hazardous materials at work, and it's important to know how to use and dispose of them properly, so they don't end up on the ground where they can be washed into the river by stormwater runoff.

If you work in any of the following fields, many of the materials you use can be harmful to the Rio Grande. Be sure you are aware of the proper way to dispose of the hazardous materials chemicals you use on a daily basis:

- Automotive (Mobile Detailers, Mobile Mechanics)
- Beautician
- Carpet Cleaning
- Dry Cleaning
- Hospitality/Restaurants
- House Cleaning
- Landscaping
- Painting / Stucco
- Pest Control
- Pet Groomers

*Web View of Links Related to Illicit Discharge and Improper Disposal
on the MRGSQT's Keep The Rio Grande! Website*



Outcome Report for Fiscal Year 2020–2021

(July 1, 2020 to June 30, 2021)

Summary of AMAFCA's MS4 Public Education, Outreach, Involvement, and Participation Program FY 2021 (July 1, 2020 - June 30, 2021)

NPDES Permit No. NMR04A000

Part I.D.5.g - Public Education and Outreach on Stormwater Impacts and
Part I.D.5.h - Public Involvement and Participation



Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) • City of Albuquerque • Bernalillo County • Town of Bernalillo • Village of Corrales • Ciudad Soil and Water Conservation District Eastern • Sandoval County Arroyo Flood Control Authority (ESCAFCA) • Village of Los Ranchos de Albuquerque • Department of Transportation (NMDOT) • City of Rio Rancho • Sandoval County • Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA)

PRESENTED BY

SUNNY505

Table of Contents

Middle Rio Grande Stormwater Team1

Bernalillo County..... 2

City of Albuquerque 4

Ciudad Soil and Water Conservation District 12

Southern Sandoval County Arroyo Flood Control Authority .. 14

Albuquerque Bernalillo County Water Utility Authority..... 15

Town of Bernalillo 16

UNM | BEMP | Bosque School..... 17

2020 BEMP Technical Report Attachement A

FY2021 Social Media Audit Attachement B

FY2021 Arroyo Classroom Final Report..... Attachement C

FY2021 RiverXchange End of Year Report Attachement D





Bernalillo County

Public Education and Public Participation

The table below summarizes the Bernalillo County Public Outreach program during this reporting period. Additional information on the outreach programs is available upon request.

Throughout the reporting period of July 1, 2020, through June 30, 2021, the Bernalillo County Public Outreach programs connected with and educated thousands of Bernalillo County residents. In addition, Bernalillo County is a member of the Middle Rio Grande Stormwater Quality Team (MRGSQT).

Public Outreach	Date	Successful Outcome
Bernalillo County website pages related to MS4 program and stormwater	July 1, 2020– June 30, 2021	Analytics show webpages had 4,438 page views.
Bernalillo County Septic Systems Permits, PIPE and TANK direct mail outreach	July 1, 2020– June 30, 2021	The Bernalillo County PIPE and TANK program provides information to the public through newspaper advertisements, websites, flyers at community centers and libraries, periodic mailings, public meetings, and by other means appropriate to inform the community about services provided through the program.
Bernalillo County / City of Albuquerque (COA) Cooperative Household Hazardous Waste (HHW) Collection Center	July 1, 2020– June 30, 2021	Bernalillo County continued to contribute to support joint efforts with COA for the HHW collection center. In FY 2021, approximately 447,000 pounds of HHW were disposed of at the Advanced Chemical Transport (ACT) HHW Collection Center. Bernalillo County contributed \$149,000 to this cooperative effort.
Bernalillo County HHW Neighborhood Collection Events	July 1, 2020– June 30, 2021	In FY 2021, Bernalillo County hosted 9 HHW weekend neighborhood collection events in association with mini-cleanup events. During the 9 events, 333 individuals participated and 11,473 pounds of HHW were collected at a cost of \$28,724. An HHW report is available upon request. The HHW report includes historical trend analysis for this outreach program as well as specific collection data per location.
Bernalillo County Stormwater Quality Bulletins	February 23, 2021 and April 20, 2021	Stormwater quality bulletins were delivered to residents via email. The February 2021 bulletin focused on watersheds and the E. coli impairment and reached 587 people (https://content.govdelivery.com/accounts/NMBERNCO/bulletins/2c1e608); the April 2021 bulletin focused on common stormwater pollutants and reach 684 people (https://content.govdelivery.com/accounts/NMBERNCO/bulletins/2ccaa80)
Bernalillo County Solid Waste Illegal Dumping Partnership (IDP) Educational Outreach	July 1, 2020– June 30, 2021	<ul style="list-style-type: none"> The County cleaned up 297 illegal dumping sites. The Illegal Dumping Awareness campaign ran 198 radio spots, 180 TV commercials, and had 5 billboards. Continued operation of the Tire Recycling and Disposal committee to educate business on the proper way to dispose of tires.
Bosque Environmental Monitoring Program (BEMP) Monitoring and Educational Outreach Programs	July 1, 2020– June 30, 2021	<ul style="list-style-type: none"> Reached approximately 13,600 people (with repeats) throughout New Mexico through their virtual and in person outreach activities. BEMP's social media platforms reached 26,400 contacts with education materials. Bernalillo County classrooms participated in monthly monitoring programs at 33 monitoring sites until no longer allowed by public health orders. BEMP provided in-classroom and field-based educational programming for 29 Bernalillo County schools. Bernalillo County provided \$35,000 in support of this program. The MRGSQT, of which Bernalillo County is a member, provided \$30,800 to support this program.

Public Outreach	Date	Successful Outcome
Bernalillo County Employee Training—Stormwater Quality Training and IDDE Training	July 1, 2020–June 30, 2021	Bernalillo County began using a video training service — Excal Visual, Inc. in FY 2018. The Excal trainings were not available for all County staff in FY 2021 due to Bernalillo County offices relocating to a new facility and office shutdowns related to COVID 19. Identified staff will be required to take the Excal trainings in FY 2022.
Master Naturalists Volunteering at Bernalillo County Open Space	July 1, 2020–June 30, 2021	Master Naturalists volunteer at the Bernalillo County Open Space workday events as well as with tour and education events for the public. Since the program began in 2010, there have been over 500 registered volunteers. In FY 2021, there were 446 documented volunteer hours. An additional 1,500 hours of attending virtual meetings and educational events.
Bernalillo County Illegal Dumping Campaign	July 1, 2020–June 30, 2021	Bernalillo County's campaign for spreading awareness about the impacts of illegal dumping on the environment includes a targeted website, YouTube videos, spots on local radio stations, TV, and billboards. In addition, the county has sponsored cleanup of 297 sites of illegal dumping. The campaign reached 4,000 people through the digital sources by which contacts could be counted. Hundreds of thousands more were reached through radio, TV, and billboards.
Rocky Mountain Youth Corps	July 2019	In partnership with Bernalillo County Parks and Recreation, the youth corps participants worked to support and expand wildlife habitat throughout the South Valley while also leading environmental education activities for local youth. 8 Corps members and 2 Supervisors completed 1,400 hours of service, educated 43 local youth, and led 4 field trips.
Southwest Conservation Corps	July 2019	Participants completed approximately 800 hours of work removing invasive species, constructing a trellis, removing fence, and planting cottonwoods at Sanchez Farm Open Space and the Westside Community Center. 5 people participated.
EPA Region 6 Stormwater Conference New Orleans, LA	August 11 – August 13, 2020	Kali Bronson, Bernalillo County Stormwater Program Compliance Manager, attended the 2020 virtual EPA Region 6 Stormwater Conference.
Tijeras Creek Watershed Collaborative Ancestral Lands Conservation Corps	September 3, 2020	Bernalillo County is a partner in the Tijeras Creek Watershed Collaborative. The Ancestral Lands Conservation Corps completed a workday helping to remove invasives species in the area. 5 people participated in the event and performed approximately 7 volunteer hours.
2021 Residential Rainwater Harvesting: Community Action to Protect the Rio Grande. Webinars, instructional video series, and on-site information session.	Virtual training webinars June 14–16, 2021 On-site info-session June 19, 2021	Ciudad SWCD, in cooperation with Bernalillo County Natural Resource Services and Bernalillo County Open Space, the Arid LID Coalition, and the Rocky Mountain Youth Corps, developed a virtual and online training program for residential rainwater harvesting. The instructional videos and additional resources and information can be found at www.bernco.gov/rainwater . Total attendance for the three virtual trainings and the in-person information session included 219 people. Bernalillo staff were members of and helped plan the webinar series as well construct the passive rainwater basin and host the on-site session.
RiverXchange Program by Ciudad Soil and Water Conservation District	2020–2021 Academic Year	Bernalillo County supports RiverXchange which gave a series of virtual presentations and virtual field trips for 38 fifth grade classes. Program elements included addressing topics in stormwater, wastewater, drinking water, and water use in agriculture. Attendance included 859 students and 39 teachers.
Sponsorship of New Mexico Land and Water Summit	February 23–26, 2021	Bernalillo County provided the New Mexico Land and Water Summit with a sponsorship of \$5,000. Topics discussed at the summit included green stormwater infrastructure topics, watershed restoration and management, and public outreach and engagement. There were 175 registered professionals in the fields of hydrology, landscape architecture, landscaping, and engineering. The virtual tour of GSI Projects included several Bernalillo County projects including the Alameda Drain Train, Alameda Storm Drain Outfall Water Quality Improvements Feasibility Study, and the Tijeras Creek Remediation Project.

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city of albuquerque



City of Albuquerque and Bernalillo County

Public Participation Numbers

Household Hazardous Waste Collection Participation | July 2018–June 2019

Month	Participants w/Unknown Location or Not Enough Info to Geocode	Total	Orphaned waste at facility	City Participants (City + No Match or Not Enough Info)	County Participants	Out of County	Out of County Breakdown	County Percentage	Monthly Cost	Light Bulbs (included in monthly cost)	Total Cumulative Cost
Jul-20	78	1624		1329	280	15	Sandoval-10, SF-5	17.2%	\$106,809.00	\$490.00	\$106,809.00
Aug-20	142	1799		1526	246	27	Sandoval-18, SF-8, Valencia-1	13.7%	\$119,039.25	\$789.00	\$119,039.25
Sep-20	119	1419		1190	224	5	Sandoval-5	15.8%	\$94,591.00	\$931.00	\$94,591.00
Oct-20	78	1374		1162	202	10	Sandoval-5, SF-4, Valencia-1	14.7%	\$90,951.25	\$622.00	\$90,951.25
Nov-20	39	892		755	133	4	Sandoval-1, SF-3	14.9%	\$59,205.00	\$463.00	\$59,205.00
Dec-20	42	830		716	113	1	Sandoval-1	13.6%	\$55,716.00	\$665.00	\$55,716.00
Jul-Dec 2020	498	7938	0	6,678	1,198	62		15.1%	\$ 526,311.50	\$3,960.00	\$526,311.50
Jan-21	44	992		842	150	0	0	15.1%	\$66,322.75	\$715	\$66,322.75
Feb-21	60	885		745	140	0	0	15.8%	\$59,791.25	\$859	\$59,791.25
Mar-21	41	1248		1078	169	1	Valencia-1	13.5%	\$83,046.50	\$758	\$83,046.50
Apr-21	60	1396		1187	209	0	0	15.0%	\$91,927.25	\$529	\$91,927.25
May-21	70	1426		1237	188	1	Sandoval-1	13.2%	\$95,211.75	\$998	\$95,211.75
Jun-21	59	1636		1,399	237	0	0	14.5%	\$108,494.75	\$874	\$108,494.75
Jan-Jun 2021	334	7,583	0	6,488	1,093	2		14.4%	\$504,794.25	\$4,733	\$504,794.25
FY20 Total	832	15,521	0	13,166	2,291	64	15,521	14.8%	\$1,031,105.75	\$8,693	\$1,031,105.75
Monthly Average	1293.416667										
Participant Fee		\$ 65.00									
FY21 Budget		\$ 540,000.00									
Remaining Balance		\$ (491,105.75)									

* All information in this report comes from ACT—Nichole Gwash (NGwash@ACTEnviro.com) by email. She will send an invoice, a list of residents (which must then be sent to Ben Sanborn for geocoding), a list of items processed, and any logs for drums and light bulbs & tubes.

Albuquerque/Bernalillo County Household Hazardous Waste Collection Event at Balloon Fiesta Park

On October 24, 2020, ACT Environmental Services and the City of Albuquerque/Bernalillo County, in a joint effort collected, segregated, packaged, labeled, transported and disposed of 12,713 pounds of Household Hazardous Waste, and 5,560 pounds of Non-Regulated Solid Waste from 194 residents within the Albuquerque/Bernalillo County at an average of 94 pounds of waste per customer.

This work was performed per the Scope of Work given to ACT by the City of Albuquerque/Bernalillo County.

A copy of each HHW Chemical Waste Manifest Bill of Ladings was provided to the City Representative at the time of collection.



DOT Hazard Class	Subsidiary Risk	Types of Chemicals	Total Gross Weight	Number of Drums X Size of Drums	Treatment Technology
Non-Haz		Used motor oil & Antifreeze	2,000 lbs.	2 X 275 Portable Totes	Recycle
Non-RCRA/Non-DOT Regulated Material Solid		Solid waste, empty containers, trash	5,560 lbs.	2 X 40 Yard Bins	Landfill
Non-RCRA/Non-DOT Regulated Material Liquid		Latex Paint	1,800 lbs.	2 X 40 Yard Bins	Landfill
2.1 – Flammable Gas		Aerosol Spray Cans	250 lbs.	1 X 275 Cubic Yard Box	Incineration
2.2 – Compressed Gases		Refrigerant Gases			Incineration
3 – Flammable Liquid		Xylene, Toluene	5,500 lbs.	13 X 55 Gallon Metal Drum	Energy Recovery / Fuel Blending
3 – Flammable Liquid	6.1 - Toxic	Captian, Diazinon	1,800 lbs.	11X 55 Gallon	Incineration
4.1 – Flammable Solid		Highway Flares			Incineration
4.3 – Dangerous when Wet		Calcium Carbide			Incineration
5.1 – Oxidizing Liquids		Hydrogen Peroxide/Sodium Hypochlorite	28 lbs.	1 X 30 Gallon Poly Drum	Incineration
5.1 – Oxidizing Solids		Potassium Nitrate/Sodium Hypochlorite	92 lbs.	1 X 30 Gallon Poly Drum	Incineration
6.1 – Toxic Solid		Captian, Diazinon			Incineration
8 – Corrosive (Acids)		Hydrochloric Acid, Sulfuric Acid	140 lbs.	1 X 55 Gallon Poly Drum	Incineration
8 – Corrosive (Basic)		Sodium Hydroxide, Potassium Hydroxide	80 lbs.	1 X 55 Gallon Poly Drum	Incineration
8 – Corrosive (Batteries)		Automotive Lead Batteries, NiCad, Lithium Ion, Alkaline	715 lbs.	1 x Wooden Pallet, 1 x 30 Gallon Poly Drum, 6 x 5 Gallon Poly Drums	Recycle
8 – Mercury		Mercury			Recycle



Albuquerque/Bernalillo County Household Hazardous Waste Collection Event at Balloon Fiesta Park

				Drum	
8 (5.1) – Nitric Acid		Nitric Acid			Incineration
9 – Environmentally Hazardous		Fluorescent Light Bulbs	308 lbs.	3 x Cylinder Box & 2 x 55 Gallon Poly Drum	Recycle

Treatment Technology	Weight
Recycle	3,023lbs.
Energy Recovery / Fuel Blending	5,500 lbs.
Incineration	2,390 lbs.
Landfill	7,360 lbs.

Waste Total	Cost	Cost/lbs.
18,273 lbs.	\$13,260.00	\$.72/lbs.

194 – Albuquerque/Bernalillo County Participants

Open Space Annual Volunteer Report

FY20/21 (7/1/20 – 6/30/21)

Number of Volunteers: 1,162

Volunteer Hours Worked 10, 560

Volunteer Opportunities were and are: Trail Watch, OSVC Traditional Gardeners, OSVC Front Desk, Monthly Bosque Wild Guided Hikes, Trail Maintenance (usually only done with staff), tree and pole plantings (with staff only), Special events Committee, Individual projects, group projects, and major OSD Clean-Ups (Rt. 66, Copper, Indian School, Menaul, Piedra Lisa, National River Day and National Trails Day.



photo by Colleen Shackley

TESTIMONIALS

Richard Shackley is committed to improving the quality of life for residents of the City of Albuquerque. He is an active Volunteer Docent in Trail Watch, Fire Watch, Bosque Wild and Education Guide. During FY20/21 he gave the city 602 Volunteer hours in the above aspects and has hit FY21/22 with even more bravado, offering to educate the youth during our summer programs and taking care of his newly adopted Trail, (Pino Trail) at Elena Gallegos.

While the world was shutting down he was on the trails advocating the importance of staying healthy and getting outdoors. When asked how he felt about volunteering during the Pandemic he stated:

"You must know that Colleen & I thoroughly enjoyed participating in this program. It was refreshing to interact with visitors for extended periods of time, to answer questions, give directions, provide maps and brochures, and to be the face of the City and Open Space over these past months. Of course, if the temperature permitted, we'd continue setting up our turquoise colored table & chairs for the entire year."

We do hope we've been helpful in gathering data that the Open Space division can use, and look forward to providing any assistance in future projects, programs, or other tasks that we can do."

In the next column is a picture of Richard in his element.

NATIONAL TRAILS DAY

National Trails Day, June 2021 was different than other years we were stationed in many different areas through the Elena Gallegos Park. However, we accomplished a lot. We had 41 Volunteers. We completed around a mile of trail improvements, mostly drain dips which are for water and erosion control. A few sections of fence were built and hundreds of cactuses were planted to close off user trails throughout the park and at Bear Canyon and Indian School. A rock retaining wall was built to stabilize one section of trail plus the trail was also widened slightly in one spot. We are looking forward to an even better National Trails Day in 2022.



Parks and Recreation

FY20/21 (7/1/20 – 6/30/21)

BOSQUE TREE PLANTING

Numerous tree and shrubs were planted in open spaces and the bosque by the river by our volunteers.

Number of acres owned or managed as Major Public Open Space: 6,000

Number of Visitors st staffed Open Space Facilities: 6,000

Number of Volunteers Yearly: 6,000

Volunteer Hours Worked: 26,00

Number of New Trees/Shrubs planted (combined trees with willow whips from previous years): 2,000



city of albuquerque





Poop Fairy Signs

Also during FY21 we gave away 202 Poop Fairy signs to local residents. We also gave the Natural History Museum 100 for distribution to the public and 250 to Parks and Open Space for posting.



Ciudad Soil & Water Conservation District

Ciudad Soil & Water Conservation District

Stormwater Presentations 2021

Date	Times	RR or ES	Event	Presenter(s)	Visitors
6/14/2021	5:30-7:00	GSI	Residential Raintwater Harvesting Workshop: Design	Judith Phillips, Hunter Ten Broeck, Jim Brooks, Tess Houle	54
6/15/2021	5:30-7:00	GSI	Residential Raintwater Harvesting Workshop: Installation	Judith Phillips, Hunter Ten Broeck, Jim Brooks, Tess Houle	51
6/16/2021	5:30-7:00	GSI	Residential Raintwater Harvesting Workshop: Maintenance	Judith Phillips, Hunter Ten Broeck, Jim Brooks, Tess Houle	35
6/19/2021	9:00am–12:00pm	GSI	Session	Judith Phillips, Jim Brooks, Tess Houle	
6/23/2021	9:00am–12:00pm	RR	Nature Niños Summer Camp	Steve Glass, Erin Blaz	50
6/25/2021	9:00am–12:00pm	RR	Geology Rocks Summer Camp (COA OSD)	Steve Glass, Erin Blaz	12
6/26/2021	10:00am–1:00pm	RR	Mud Day (COA OSD)	Steve Glass, Erin Blaz	230





Southern Sandoval County Arroyo Flood Control Authority



Poop Fairy Signs

Distribution of approximately 100 poop fairy signs on the public facing side of the organization's facilities.

Water Authority distributed educational bill stuffers, ran radio ads and television advertising.



See the Water Authority television advertising at <https://youtu.be/AJojsyJfnK4>.



Town of Bernalillo

"The City of Coronado"

Stormwater tips are printed and distributed in the town's water bill in June, July and August. This includes 3,500 copies each month.

MAYOR
JACK TORRES

COUNCILMEMBERS
TINA DOMINGUEZ
DALE PRAIRIE
SHARON TORRES-QUINTANA
PHILLIP VALVERDE



Town of BERNALILLO

"The City of Coronado"

AUGUST 2021

BERNALILLO FARMERS MARKET
Pavilion at Rotary Park 4-7pm



Fresh fruits, vegetables, herbs and more!
Every FRIDAY through OCTOBER!
Double your SNAP EBT dollars at the Farmer's Market!

If you have any questions about being a vendor, or just finding good, fresh food, call Bonnie Hill @ 228-5801

2021 PNM POLE AUDIT:
COMING TO BERNALILLO JULY-OCTOBER

Over the next few months, PNM will be completing an audit of the power poles. PNM has hired TechServ to complete the audit and the information gathered will determine how many attachments are on each pole, whether there are any unauthorized attachments, and identify any potential safety or maintenance concerns.

PNM needs our help! Because there are many poles located in or near customer's backyards or alleys behind homes, the pole auditors may require the ability to enter a customer's property to obtain pole attachment information. Please keep an eye out for TechServ auditors and allow them access to our pole(s), if needed. PNM asks that customers exercise precaution with their dogs by keeping them inside when the auditors are expected to be in their area.

When will the Audit be in Bernalillo? PNM considers Bernalillo to be in the Albuquerque Metro Area, it is anticipated that auditors will be in the area from July to October. TechServ will be conducting inspections for this pole audit Mondays-Saturdays from 7am-7pm.

For more information, visit www.pnm.com/2021poleaudit or call PNM customer service at 888-342-5766





Mountain West BREW FEST
BE SAFE.
BE WELL.
SEE YOU IN 2022!

COMPREHENSIVE LAND USE PLAN UPDATE NEEDS YOU

The Town is updating its Comprehensive Land Use Plan, which provides a basis for determining key strategies to guide and manage the future development of the Town of Bernalillo. The Plan is a policy guide for making decisions about the physical development of the Town.

It contains information about demographics, community culture, land use patterns and preferred development scenarios, the local economy, housing, transportation systems and community services.

The next public meeting for the Comprehensive Land Use Plan will be hosted in October — please check back for details.



Town of Bernalillo's Annual
SCHOOL SUPPLY DRIVE

Accepting school supply donations for the young students of Bernalillo. Supplies are given to students at La Escuelita, Carroll Elementary, and Bernalillo Elementary.
Drop off supplies at Town Hall.

ALL BRAND NEW SUPPLIES SUCH AS: BACKPACKS, COLORED PENCILS, CRAYONS, MARKERS, PAPER, GLUE STICKS, AND SO MUCH MORE IS NEEDED!

CALL 867-3311 FOR MORE INFO

KEEP THE RIO GRANDE!

Grease, fats and oils can clog your drain and cause major issues in the sewer lines.

It's easy to properly dispose of these substances by:

1. Let them completely cool
2. Once cooled, scrape into a disposable container
3. Place the container into a plastic bag and dispose of in the trash.

Visit the following website for more ways to keep the Rio Grande Grand:
WWW.KEEPTHERIOGRAND.ORG

AUGUST CALENDAR

3rd - Planning & Zoning Meeting - Remote Meeting - 6:30 pm
9th - Town Council Meeting - Remote & In-Person - 6:30pm
10th - CLOSED in observance of FIESTA DE SAN LORENZO
23rd - Town Council Meeting - Remote & In-Person - 6:30pm

Meeting Information can be found on Town Website

TOWNOFBERNALILLO.ORG @BernalilloNM

(505) 867-3311 829 CAMINO DEL PUEBLO



Please join us Thursday, May 13!



2021 Virtual CRAWFORD SYMPOSIUM

**Ecological Identities: Bridging
Accessibility of Science and Education**

Streaming live!

Thursday, May 13th, 2021

Starting at 1:00 PM MDT

This year's Crawford Symposium will be hosted virtually! Tune into our BEMP YouTube channel to watch live as we join together to honor the multiple voices and perspectives of BEMP students, partners, and community this year.

Click here to access this event on BEMP's YouTube channel!

Engage with our participants in a live chat! Follow the instructions below to join in on the fun.

1. Create a personal YouTube account (requires a Gmail account) and log in with your username/email.
2. Join the [BEMP 2021 Crawford Symposium](#) live stream.
3. To post in the live chat, click where it says "Live Chat" and begin typing. Then, click the send icon.

***Please note that you do not need a YouTube account to watch the event, only to participate in the live chat.**

If you do have a Youtube account, please subscribe to our channel!

Please visit [BEMP.org](#) for more 2021 Crawford Symposium details.

The Bosque Ecosystem Monitoring Program's (BEMP) Crawford Symposium is an annual conference held in honor of BEMP's co-founder Dr. Clifford Crawford. The Crawford Symposium is a wonderful way for BEMP's partners, supporters, and the community at large to learn how important student-

**Event held in honor of
BEMP's co-founder**

[Dr. Clifford Crawford](#)





**BOSQUE ECOSYSTEM MONITORING PROGRAM (BEMP)
SITE MONITORING REPORT FOR 2020**

2020 ANNUAL SITE MONITORING TECHNICAL REPORT

Submitted 31 March 2021

2020 Final Report submitted to:

US Army Corps of Engineers, USACE Contract #: W912PP18C0023

US Bureau of Reclamation, USBR Contract #: R18AP00129

US Fish and Wildlife Service Valle de Oro National Wildlife Refuge

Bernalillo County, Bosque School, City of Albuquerque, Greater Rio Grande Watershed Alliance,
Mid Rio Grande Stormwater Quality Team, Middle Rio Grande Conservancy District, Pueblo of
Sandia, Pueblo of Santa Ana, Pueblo of Santo Domingo, Sevilleta Long Term Ecological Research,
University of New Mexico Department of Biology, Valencia Soil and Water Conservation District

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CONTENTS

1.0 Introduction	3
2.0 Importance of long-term data and community outreach and citizen science	5
3.0 Field and data analysis reform due to COVID 19	7
4.0 Datasets collected at BEMP sites from north to south	10
5.0 Depth to groundwater in the riparian floodplain	12
6.0 Precipitation on the Rio Grande floodplain	15
7.0 Leaf litterfall as proxy for productivity	20
8.0 Vegetation surveys to monitor changes in plant cover	28
9.0 Arthropods as indicators of ecosystem transitions	35
10.0 Temperature data collected at select BEMP sites	45
11.0 Tamarisk Leaf Beetle monitoring on BEMP sites	49
12.0 Outreach for the 2019-2020 school year	53
13.0 Student research projects for the Virtual Symposiums	55
14.0 Ongoing commitment to justice, equity, diversity, and inclusion	57
15.0 Water quality on the Middle Rio Grande - Impacts on the watershed	59
16.0 Rio Grande wetlands as potential bioremediators	62
17.0 Conclusions	68
Implications for Management	68
Implications for Education	68

Bosque Ecosystem Monitoring Program (BEMP)

Report on 2019-2020 Education and Monitoring

March 2021

1.0 Introduction

Objective: To collect and analyze abiotic and biotic data at BEMP sites in the Middle Rio Grande Bosque while involving K-12 and university students in learning about and monitoring this ecosystem.

All data and reports are available on the BEMP website, www.BEMP.org

Scope of Work: The Bosque Ecosystem Monitoring Program (BEMP) combines long-term ecological research with community outreach by involving K-12 teachers and their students in monitoring key indicators of structural and functional change in the Middle Rio Grande riparian forest, or “bosque.” In 1996, BEMP began as a collaboration between the University of New Mexico, Department of Biology and Bosque School in Albuquerque, with fewer than 200 participants in its first year. Now, BEMP averages approximately 9000 participants annually, although these numbers have been impacted by the COVID-19 pandemic. The BEMP experience builds science skills, educates the community about the bosque, and helps create a constituency for stewardship of the bosque. BEMP findings derived from student-gathered data are used by government agencies to inform multi-million dollar river and riparian management decisions.

During this reporting period, BEMP had 33 active monitoring sites along 250 miles of the Rio Grande, including 32 sites within the Middle Rio Grande (Figure 3). Through the strategic location of these sites, BEMP studies the ecological drivers of fire, flooding, climate change, and human alteration on the bosque ecosystem. Two-thirds of the BEMP sites were installed at the request of natural resource managers to monitor the long-term ecological impacts of restoration projects such as mechanical clearing, wood chipping, and bank-lowering. The other third were installed by BEMP staff to facilitate research opportunities or at the request of schools or partners.

Both biotic and abiotic variables are monitored at the BEMP sites. Our abiotic datasets are: depth to groundwater; water level in ditches and drains; precipitation; above- and below-ground temperature; and water quality in the Rio Grande, ditches and drains, and groundwater. Our biotic datasets include litterfall; vegetation cover; fuel load and woody debris; cottonwood phenology; surface-active arthropod richness and abundance; and tamarisk leaf beetle distribution, abundance and impact.

BEMP hosted two events during the year to present new data, visualizations, and analyses: the Crawford Symposium and the Luquillo-Sevilleta Virtual Symposium. BEMP staff and students present BEMP data to managers, professionals, and students several times throughout the year

depending on conference availability. In 2020, BEMP data were shared at the Sevilleta Science Symposium and the Middle Rio Grande Endangered Species Collaborative Program Science Symposium.

Timing of Data Collection: Depth to groundwater, water level in nearby ditches and/or drains, precipitation, and litterfall are collected during the week of the third Tuesday of each month. Surface-active arthropods are collected three times each year, in the spring, summer and fall. Vegetation cover is collected once each year in August-September. Tamarisk leaf beetle monitoring is conducted during the week of monthly monitoring from May-August with some sites collected in September. All other datasets are collected as funding permits.

Delays due to COVID-19 restrictions: State and university restrictions due to COVID-19 necessitated shifts in BEMP collections, lab processing, data entry, and data checking. The new safety measures and almost total lack of student involvement in data collections and processing resulted in delays, which were further compounded by loss of BEMP staff (due to reduced funding). These shifts and delays are mentioned in the relevant sections in this report. BEMP staff have worked to maintain our research schedule but are still working on some data processing. Sites that were closed due to COVID-19 restrictions will show missing data for those months and resulted in a reduction of the total number of sites monitored in 2020. Data processing (especially litterfall and arthropods) and data analyses will continue to be delayed in 2021 due to these same circumstances. Unless additional funding is secured, processing and analyses will continue well into 2022.

2.0 Importance of long-term data and community outreach and citizen science

BEMP started in 1996 with funding from the National Science Foundation and a goal of reaching 8 sites. Although establishing 8 long-term sites seemed unlikely, by 2001, BEMP had reached 8 sites and had students and teachers dedicated to monitoring each site. That year BEMP had 400 participants, sites installed to aid stakeholders in monitoring restoration practices, and stakeholders requesting and using BEMP data. Through the years, agencies and stakeholders requested the addition of new sites and new datasets while teachers and schools requested BEMP sites and field opportunities for their students. By 2013-14, BEMP started reaching between 9000 and 10,000 participants per year (Figure 1), had 30 established sites, and maintained 11 core datasets.

The long-term data have been used in informing predictive models, assessing restoration projects, understanding bosque response to different ecosystem drivers (e.g., fire, flooding, clearing, impacts of climate change, introduction of biocontrols), and shifts in native and exotic vegetation. Long-term monitoring of these sites is critical for understanding how the ecosystem responds to land management strategies and climate variability, as well as our ability to effectively use adaptive management and best practices strategies.

By 2020, BEMP had reached 100,000 participants. Over the last several years, there have always been a few University of New Mexico undergraduates in the BEMP course that had previously participated in BEMP as elementary, middle, and/or high school students. These students are often reconnected to their former schools and sites. BEMP has been part of a meaningful story for many students. BEMP has helped students connect with their local landscape, learn science through hands-on research, and communicate or present their understanding through math, writing, art, and other forms of expression.

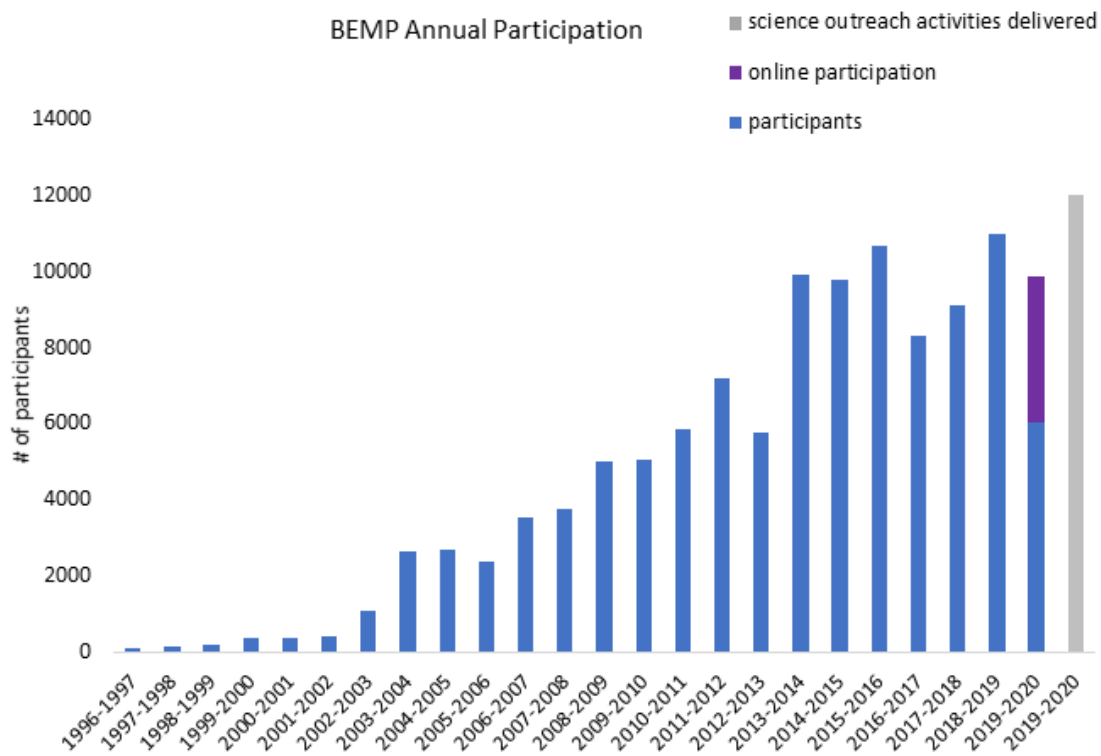


Figure 1. BEMP outreach includes students and adults participating in long-term monitoring, study trips, festivals and events, conferences, training, and other BEMP activities.

3.0 Field and data analysis reform due to COVID 19

The State of New Mexico began implementing 'stay at home' orders when positive cases of coronavirus COVID-19 were confirmed within the state in mid-March 2020. The global pandemic had immediate and notable impacts on our organization's operations. The most immediate impact was the cancellation of our Crawford Symposium which was cancelled on March 11, 2020, the same day it was to take place. This event was later modified and held as a virtual event showcased on YouTube.

From this point forward, BEMP implemented stringent safety precautions starting with moving our office work to our home spaces. Within State and CDC guidelines, BEMP was able to continue operating in the field to ensure that contracted data were collected and students were still able to receive BEMP programming through alternative means.

In 2020, BEMP aimed to collect data from 33 research sites across 270 miles of New Mexico. Three of these sites are established on the Indigenous lands of Santo Domingo, Santa Ana and Sandia Pueblos. These Sovereign Nations closed their borders in order to contain the spread of the virus that was disproportionately impacting their communities. BEMP was unable to access these sites for several months which resulted in missed data collections. Later in the year, we were able to gain permission to collect data at Sandia and Santa Ana Pueblo BEMP sites but did not receive permission to collect at the Santo Domingo BEMP site.

In order to ensure staff safety while working in the field and laboratory environments, we were able to adopt and modify the Sevilleta Long Term Ecological Research (SEV-LTER) Network's Field and Lab Protocols. Access to the full protocols can be made available upon request. If feeling symptom free, staff only (no K-12 students) were allowed to meet in the field while wearing face coverings and maintaining 6 ft. of physical distance as much as possible (Figure 2). Hand washing and use of sanitizing products was encouraged on a frequent basis. Any equipment passed between members of different households was sanitized with disinfecting spray or wipes. Staff were required to drive separately to all sites for much of the time and were eventually permitted to have two people together in a vehicle while wearing masks. Many willing staff household members began to participate in BEMP collections as well.

Due to the fact that several different small groups collected the data across the 33 active sites, we began holding 'Data Drop and Swap' events at a local parking lot or park to gather all of the data into one location. Group gatherings were limited so we created a sign up sheet to ensure no more than the allowed number of people were gathered at one time.

Access to the University of New Mexico lab facilities was initially not allowed, thus equipment was brought home so staff were able to continue to process and enter the data collected. Once restrictions began to lift, additional safety precautions were instituted so that safe indoor activities could be conducted. Limited persons were allowed into the lab spaces; cleaning of used equipment and spaces

plus online video education regarding containing the virus were required in order to begin using the facilities.

Our inability to use lab space for several months notably impacted our ability to begin processing the tamarisk leaf beetles that were collected in the field from May through September. The lab space opened up with several restrictions so we were behind schedule in data processing but were able to complete the processing.

BEMP's mission is about science and education of community members. With the start of the pandemic, BEMP ceased all field activities with K-12 groups and education moved towards an online format. BEMP still taught a class of students in the Bosque Internship class (Bio 408/508) at UNM. These university students were able to assist with field collections and limited lab work starting in August 2020 using the Sevilleta LTER field and lab protocols.



Figure 2. Staff drove separately to field collection sites, wore masks, used sanitizing products, and maintained physical distance when possible to protect staff and mitigate the spread of the COVID-19 virus.

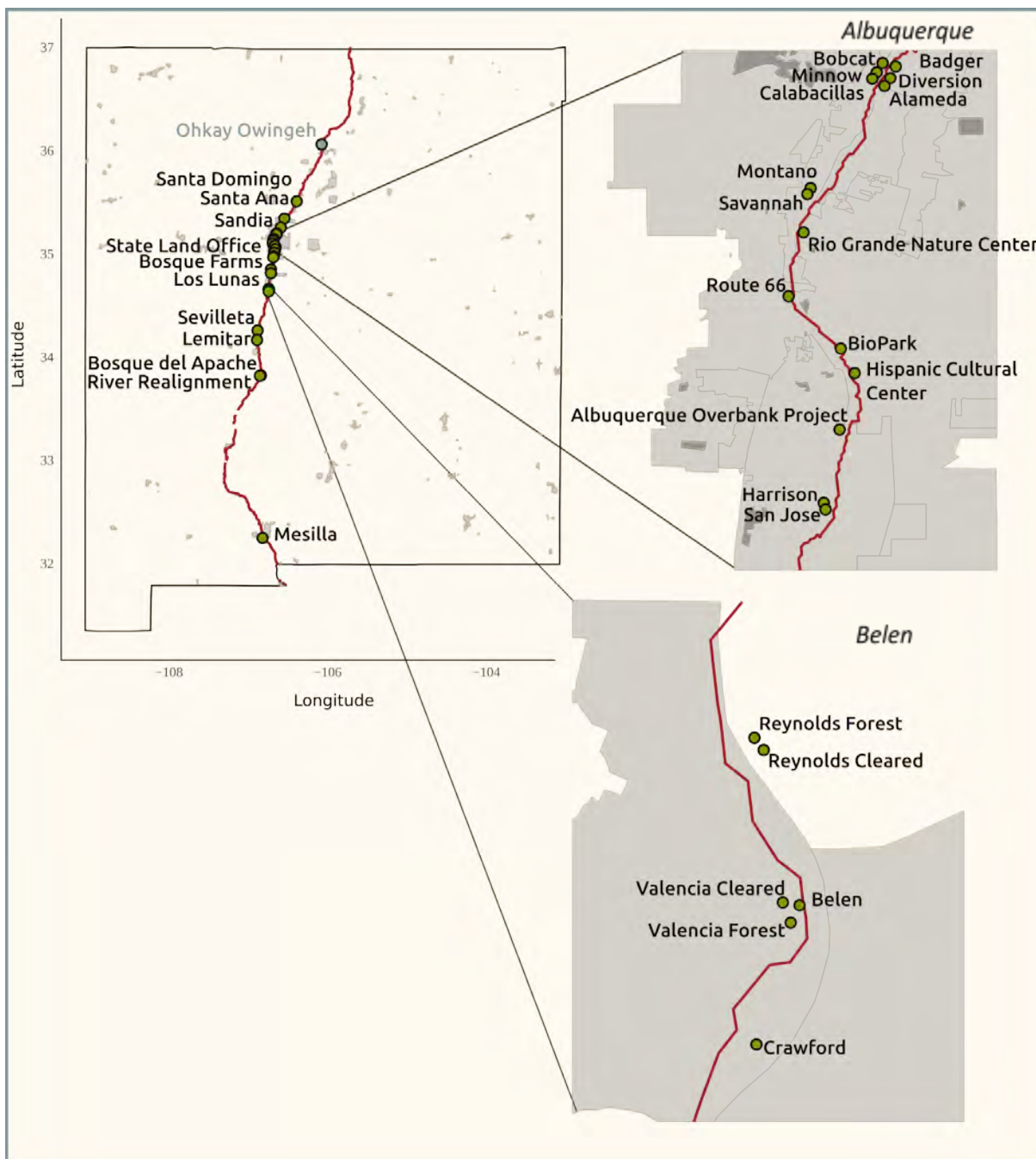


Figure 3. Map of 33 active BEMP sites along the Rio Grande; Ohkay Owingeh is no longer an active site. The Valle de Oro BEMP site has been under construction from September 2019 through all of 2020 and into 2021.

4.0 Datasets collected at BEMP sites from north to south

Table 1. BEMP site numbers running north to south, with names, abbreviations, counties, latitude, longitude, BEMP-designated reach, and data collected (2019 vegetation cover, 2020 tamarisk leaf beetle, 2018 surface-active arthropods, 2020 groundwater wells, 2020 litterfall, and 2020 temperature).

SITE #	SITE NAME	ABBR	COUNTY	LAT	LONG	2019 VEG	2020 TLB	2018		2020 WELLS	2019 LITTER	2020 TEMP	River REACH
								ARTHROPODS					
24	Santo Domingo	SD	Sandoval	35.50989	-106.39	X	X^				X		N Perch
5	Santa Ana	SA	Sandoval	35.34284	-106.546	X		X			X	X	N Perch
32	Sandia	SAND	Sandoval	35.25523	-106.591	X	X^	X	X*		X		N Perch
22	Bobcat	BOB	Bernalillo	35.19706	-106.644	X				X	X		N Abq
21	Badger	BAD	Bernalillo	35.19557	-106.642	X		X	X		X		N Abq
12	Minnow	MIN	Bernalillo	35.19315	-106.647	X		X	X		X		N Abq
10	Diversion	DIV	Bernalillo	35.19196	-106.644	X	X			X	X		N Abq
11	Calabacillas	CALAB	Bernalillo	35.19057	-106.649		X			X	X		N Abq
1	Alameda	ALA	Bernalillo	35.18805	-106.647	X		X	X		X	X	N Abq
17	Montano	MON	Bernalillo	35.14529	-106.68	X		X	X		X		N Abq
6	Savannah	SAV	Bernalillo	35.14285	-106.682	X	X	X	X		X	X	N Abq
2	Rio Grande Nature Center	RGNC	Bernalillo	35.12675	-106.688	X		X	X		X	X	N Abq
20	Route 66	Rt 66	Bernalillo	35.10066	-106.692	X	X	X	X		X	X	S Abq
23	BioPark	BioP	Bernalillo	35.07873	-106.668	X**				X	X	X	S Abq
8	Hispanic Cultural Center	HCC	Bernalillo	35.06881	-106.658	X		X	X		X		S Abq
29	Albuquerque Overbank Project	AOP	Bernalillo	35.04753	-106.664	X	X	X	X		X	X	S Abq
13	Harrison	HARR	Bernalillo	35.01506	-106.674	X	X	X	X		X		S Abq

31	San Jose	SJ	Bernalillo	35.01217	-106.674	X		X	X	X		S Abq
28	Valle de Oro	VDO	Bernalillo	34.97895	-106.68			X	X	X		S Abq
30	State Land Office	SLO	Bernalillo	34.9672	-106.686	X		X	X	X	X	S Abq
27	Bosque Farms	BF	Valencia	34.84885	-106.715	X	X	X	X	X		Val
3	Los Lunas	LL	Valencia	34.81237	-106.714	X	X	X	X	X	X	Val
19	Reynolds Forest	RF	Valencia	34.66065	-106.743	X	X	X	X	X		Val
18	Reynolds Cleared	RC	Valencia	34.65966	-106.742				X	X		Val
15	Valencia Cleared	VC	Valencia	34.64863	-106.739	X	X	X	X	X		Val
4	Belen	BEL	Valencia	34.64843	-106.738	X		X	X	X	X	Val
16	Valencia Forest	VF	Valencia	34.64716	-106.738	X		X	X	X		Val
25	Crawford	CRAW	Valencia	34.6405	-106.742	X	X	X	X	X		Val
14	Sevilleta	SEV	Socorro	34.25834	-106.883	X	X	X	X	X		Socorro
7	Lemitar	LEM	Socorro	34.16703	-106.89	X	X	X	X	X	X	Socorro
34	River Realignment	RR	Socorro	33.82269	-106.842			X	X***	X		Socorro
33	Bosque Del Apache	BDA	Socorro	33.81965	-106.854	X	X	X	X	X		Socorro
26	Mesilla Valley Bosque State Park	MVBSP	Doña Ana	32.24833	-106.821				X	X	X	S arid

*data collected but housed with Pueblo

^ sites not collected due to COVID 19 access restrictions

**site not monitored for this collection period

***wells belong to USBR

5.0 Depth to groundwater in the riparian floodplain

Depth to groundwater is monitored at most BEMP sites with the exception of the Pueblos of Santa Ana and Santo Domingo, sites 5 and 24. Groundwater data are collected with permission at the Pueblo of Sandia, but these are proprietary data and requests for groundwater data must go through the Department of Natural Resources at the Pueblo. At all other BEMP sites, five groundwater wells are monitored during the week of monthly monitoring, along with the nearby ditch or drain. Except when pandemic restrictions were in place, K-12 students and teachers monitored sites along with BEMP staff or UNM interns. The USGS river flow data are downloaded based on the day of monitoring from the USGS Central gauge (USGS Gauge ID: 08330000).

Full monitoring methods can be found at:

<https://seureservercdn.net/45.40.146.38/659.541.myftpupload.com/wp-content/uploads/2016/01/well-installation-and-monitoring-directions.pdf>.

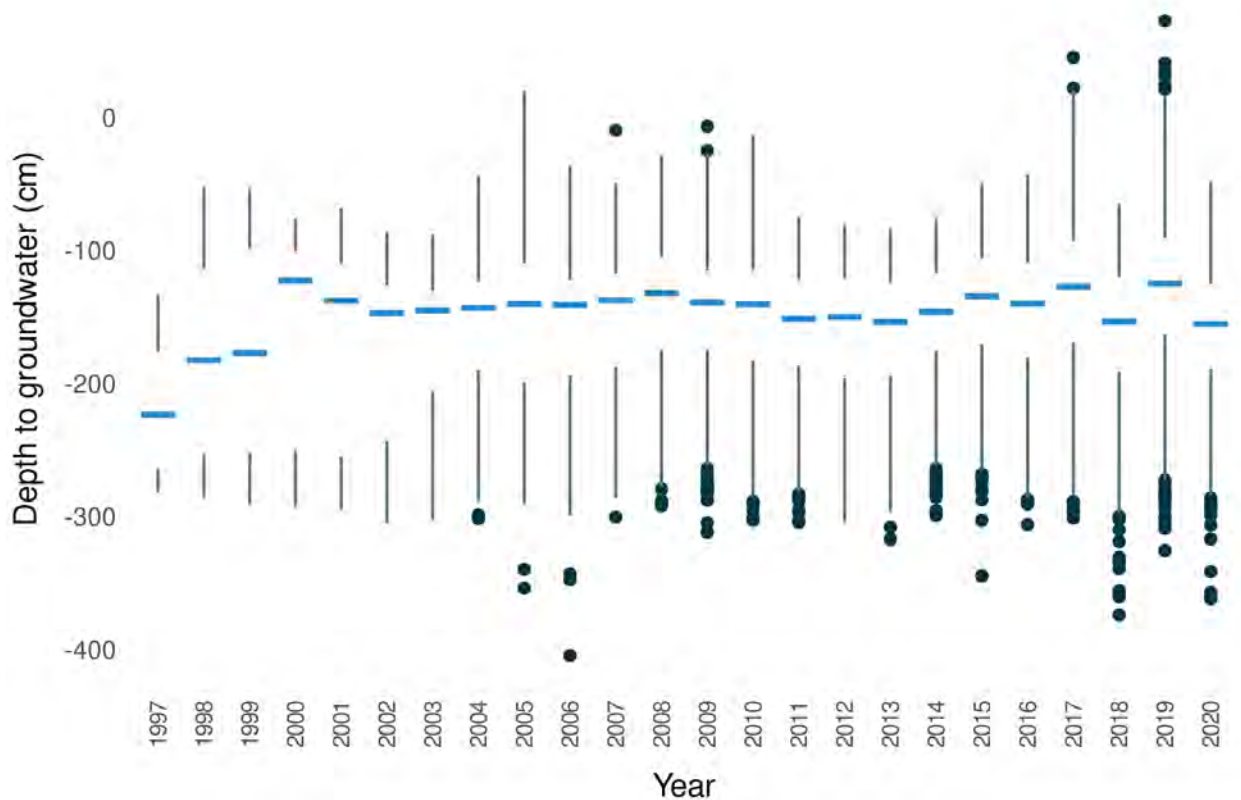


Figure 4. Boxplots of depth to groundwater from 1997 to 2020.

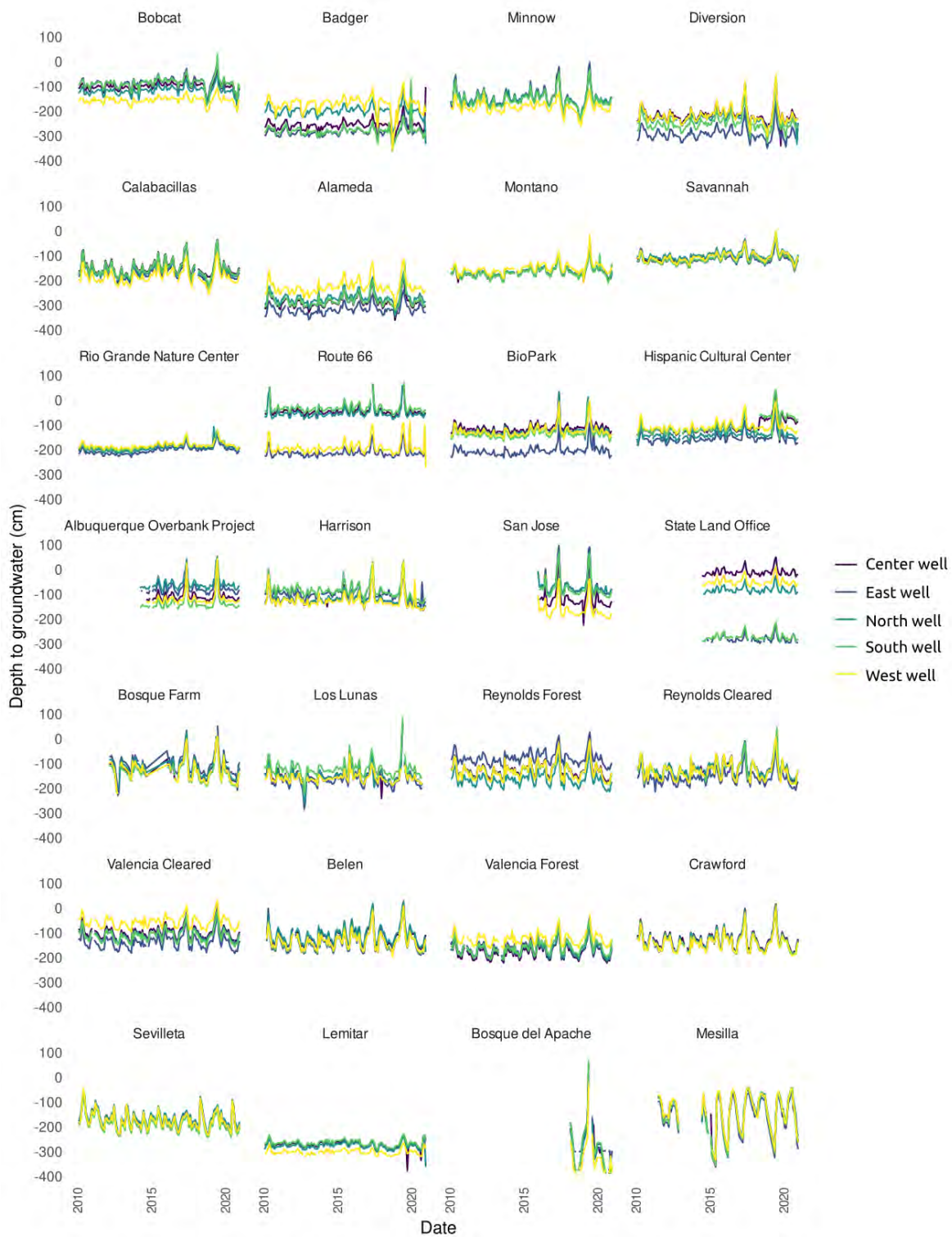


Figure 5. Ten year time series of depth to groundwater showing individual wells with sites ordered from north to south.

The shallow groundwater median levels do not show large changes across years when analyzed across all sites. Through the years, the number of sites has increased. Some sites show a decline in groundwater depth over time, but this is strongly correlated with changes in river flow. Of particular note is the large number of outliers with low water tables and the increasing variability in recent years. In the last decade, there are more outliers below the lower quartile, and the lower quartiles are larger than the higher quartiles, representing deeper groundwater levels at sites and the impact of the drought. The increase in variability is seen in the years of high river flow, as the presence of outliers then occurs above and below the highest and lowest quartiles, and the quartiles are longer. Increasing variability is one of the predicted impacts of climate change that deserves more study.

6.0 Precipitation on the Rio Grande floodplain

Data from two rain gauges are collected monthly at all but two BEMP sites. There is one TruCheck rain gauge located beneath a tree canopy and a second gauge located in an open area. A small amount of vegetable oil is added to each gauge in order to prevent precipitation from evaporating. In the past we had issues with the Tru-check gauges cracking, but as those issues have declined, BEMP has gone back to using only the Tru-Check rain gauges at all sites in 2019.

Full monitoring methods can be found at:

<https://secureservercdn.net/45.40.146.38/659.541.myftpupload.com/wp-content/uploads/2016/01/weather-station-precipitation-monitoring-directions.pdf>

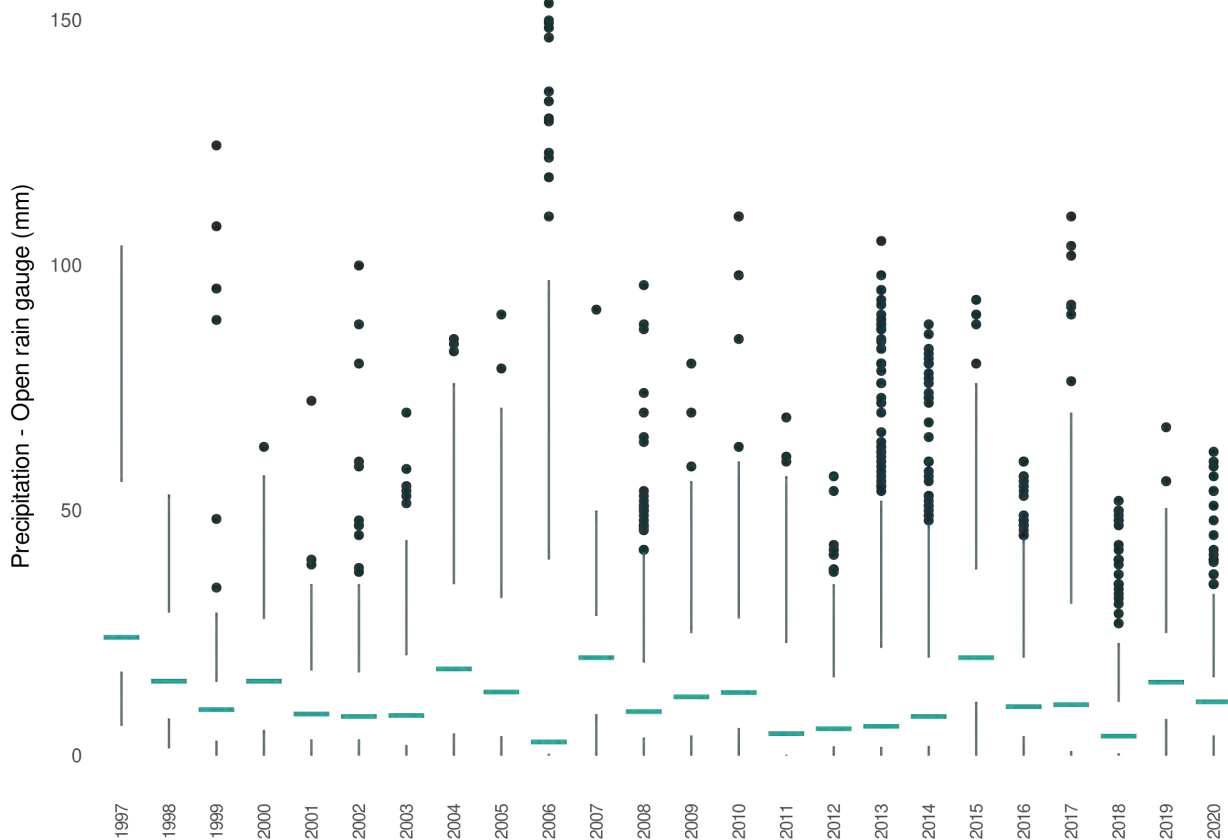


Figure 6. Box plots of open rain gauge precipitation from 1997 to 2020.

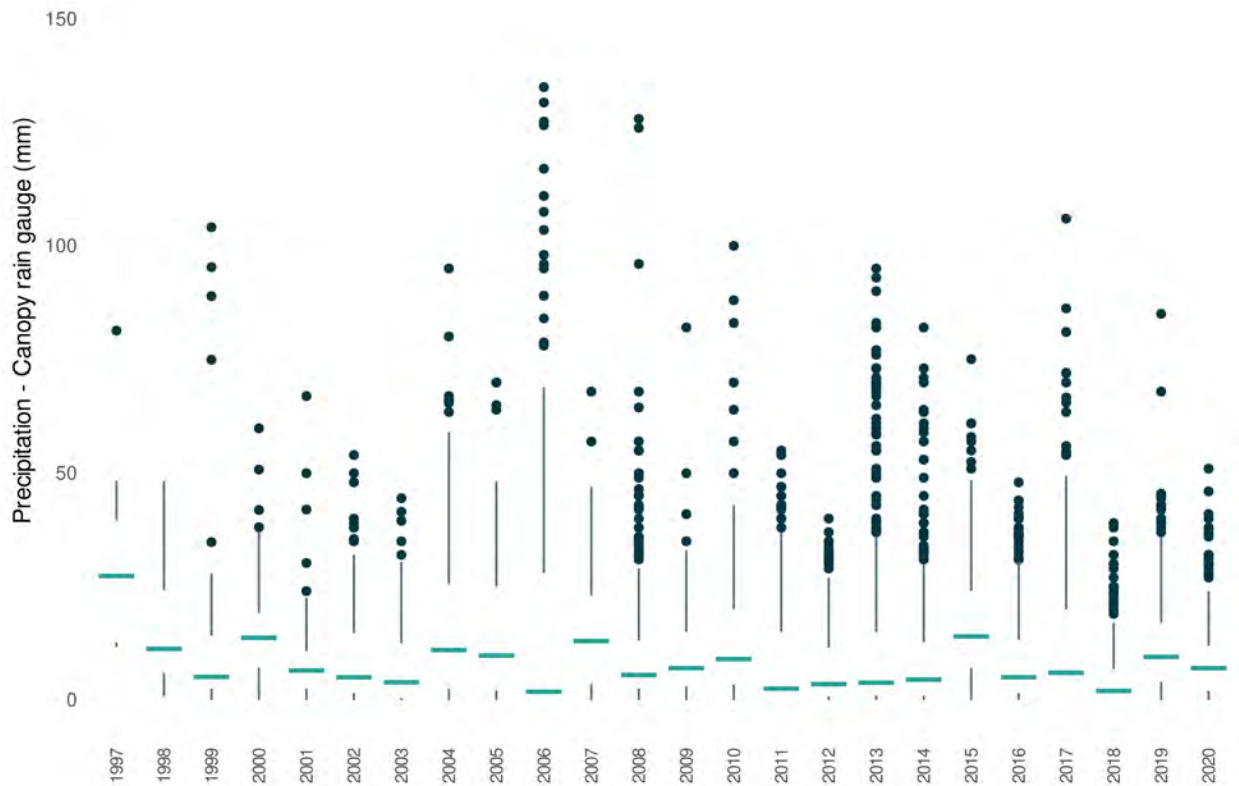


Figure 7. Box plots of canopy rain gauge precipitation from 1997 to 2020.

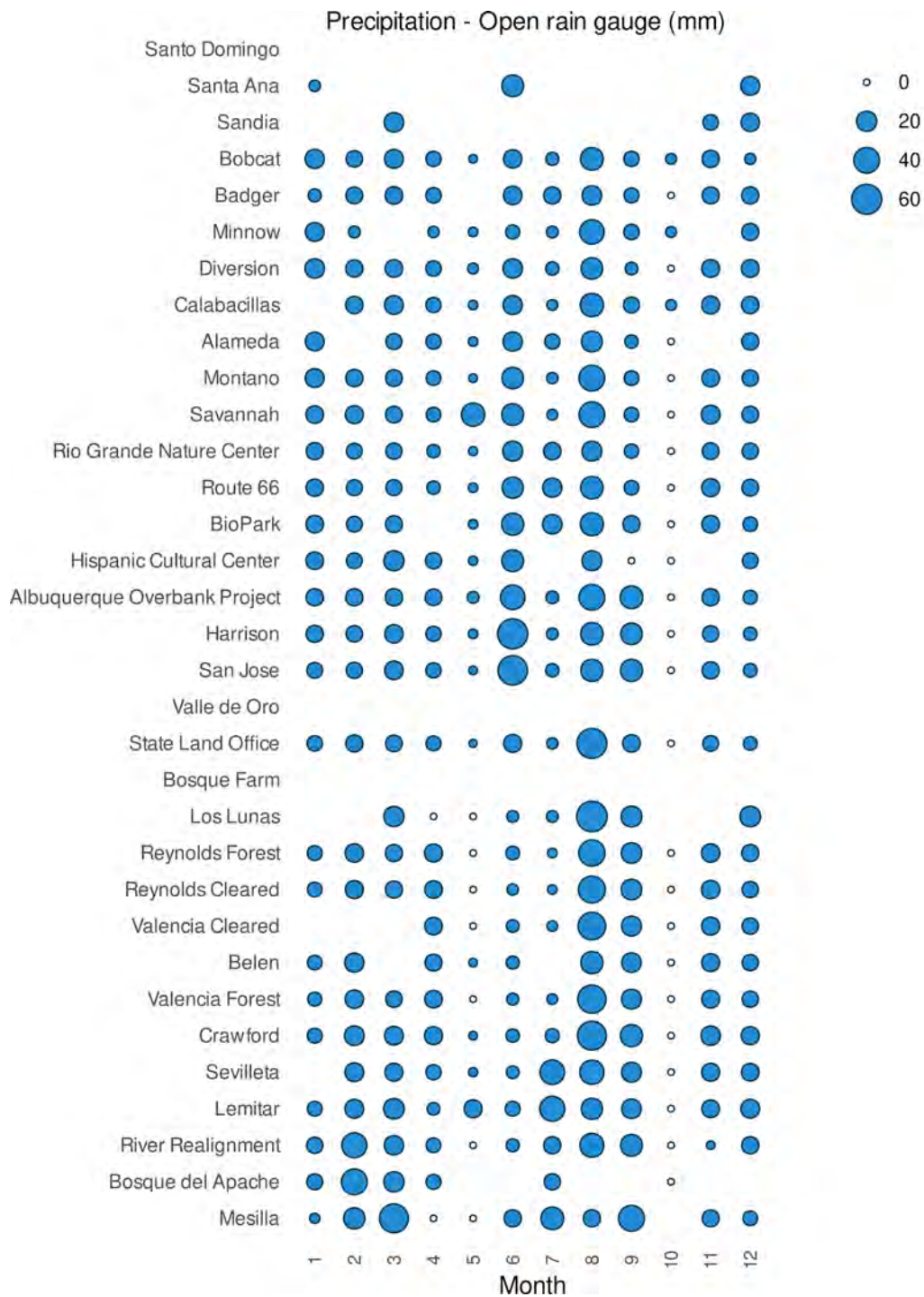


Figure 8. Dot plot of the open rain gauge precipitation data for 2020 with sites arranged from north to south.

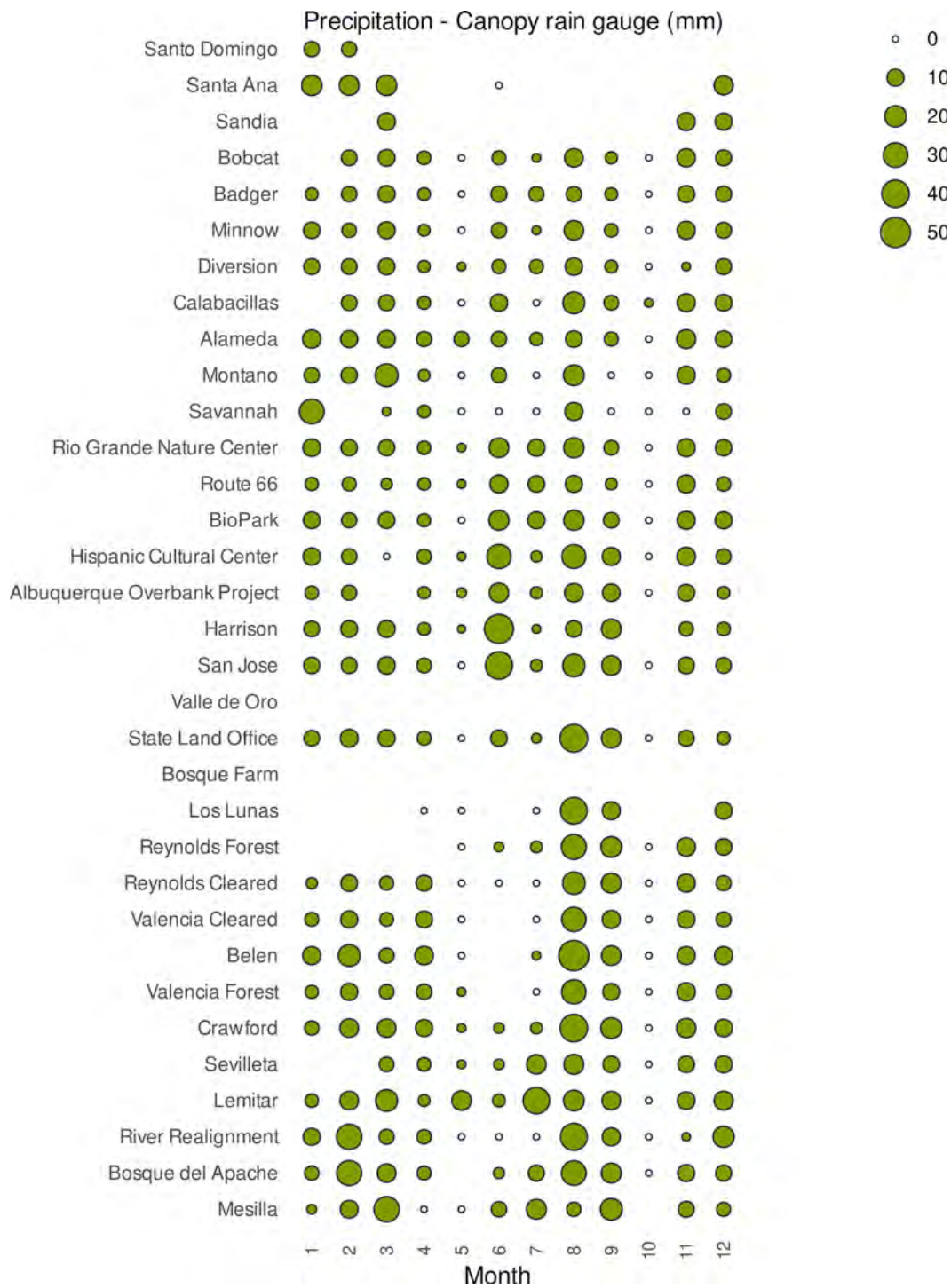


Figure 9. Dot plot of the canopy rain gauge precipitation data for 2020 with sites arranged from north to south.

2020 was a grim year for precipitation in the Middle Rio Grande Valley. Central New Mexico typically receives between 9-10 inches of precipitation annually, however total precipitation from a central Albuquerque site, Rt 66, was only 136.5 mm (5.36 inches) from the open gauge. Sites in Belen received a very similar 140 - 145 mm total precipitation for 2020. In BEMP's 24 years of data collection, only 4 years experienced less precipitation, 1999, 2003, 2012 and 2018. Earlier years contained fewer BEMP sites with less range across the state.

Monsoon rainfall in August provided some relief for the parched system, however the rain events were less than hoped for. The State Land Office site located in southern Albuquerque experienced the greatest amount of precipitation from the August monsoons with a total of 59 mm (2.3 in) precipitation. One or more BEMP sites experienced no precipitation at all in April, May, and October 2020. October was the driest month of the year with zero precipitation recorded at 23 of the 31 sites collected.

Access restrictions resulting from the COVID-19 pandemic prevented precipitation data from being collected at the Santo Domingo site for most of the year, and Santa Ana and Sandia Pueblo sites for part of the year. Bosque Farms does not have any rain gauges due to persistent vandalism and the Valle de Oro site has been under construction since the fall of 2019 so no data were collected.

7.0 Leaf litterfall as proxy for productivity

Litterfall is collected each month by K-12 students, teachers, university students, and BEMP staff, depending on pandemic restrictions. Leaf litterfall is a measure (proxy) of productivity of 10 dominant native and exotic woody species. The natives consist of cottonwood (*Populus deltoides* ssp. *wislizenii*), willows (*Salix* spp.), seepwillow (*Baccharis salicifolia*), New Mexico olive (*Forestiera pubescens*), thicket creeper (*Parthenocissus vitacea*), and false indigo bush (*Amorpha fruticosa*). The exotics species consist of saltcedar (*Tamarix chinensis*), Russian olive (*Elaeagnus angustifolia*), Siberian elm (*Ulmus pumila*), and mulberry (*Morus alba*). Reproductive effort is measured through the fall of reproductive parts (flowers, buds, seeds) of cottonwood, willows, saltcedar, Russian olive, and Siberian elm. Stress and senescence of woody species are captured through wood fall.

Full monitoring methods can be found at:

<https://secureservercdn.net/45.40.146.38/659.541.myftpupload.com/wp-content/uploads/2016/01/Litterfall-monitoring-and-lab-directions.pdf>

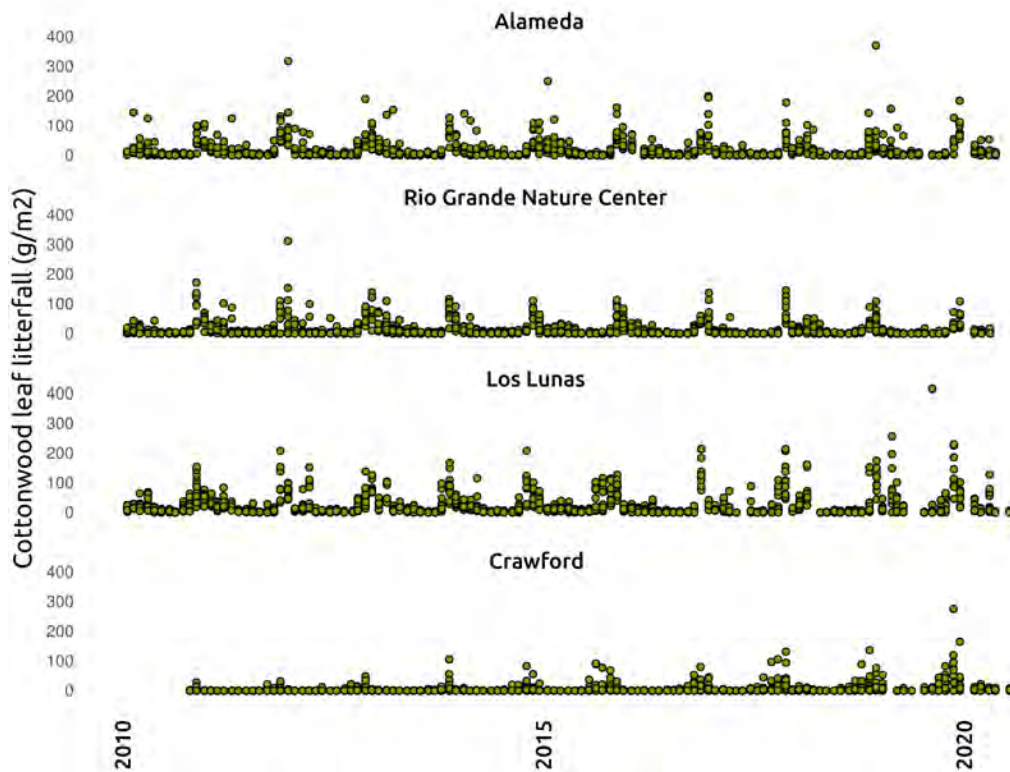


Figure 10. Monthly time series data from four BEMP sites showing ten years of data. The monthly plots show a complicated relationship of leaf litterfall from autumn leaf drop, drought stress, senescence, and wind storms. BEMP sites are arranged from north to south.

The gathering of leaf litterfall and large woody parts on a long term monthly scale is necessary to understand the complicated changes occurring on the Rio Grande. The long term monthly collection allows us to capture events from restoration projects (Crawford), to senescing cottonwood trees (Alameda), weather events like the March winds in New Mexico, to heavy storm events and drought stress (early leaf drop) (Figure 10). 2019 litterfall data are not yet fully processed or QA/QCd at this point due to limitations of data processing under COVID restrictions (limitations to lab access, student participation, and reductions in staff).

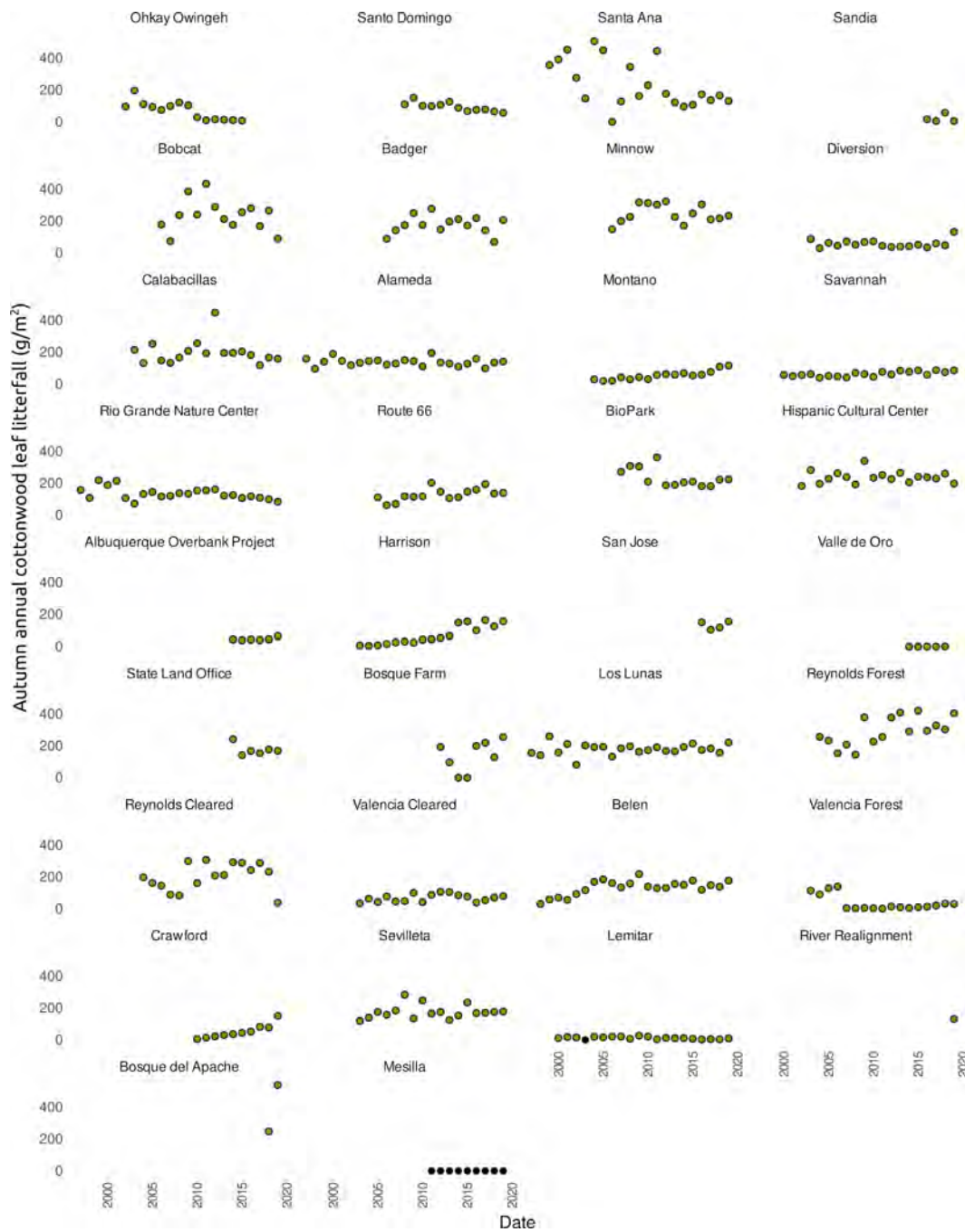


Figure 11. Autumn annual cottonwood leaf litterfall for the past ten years. BEMP sites are arranged from north to south.

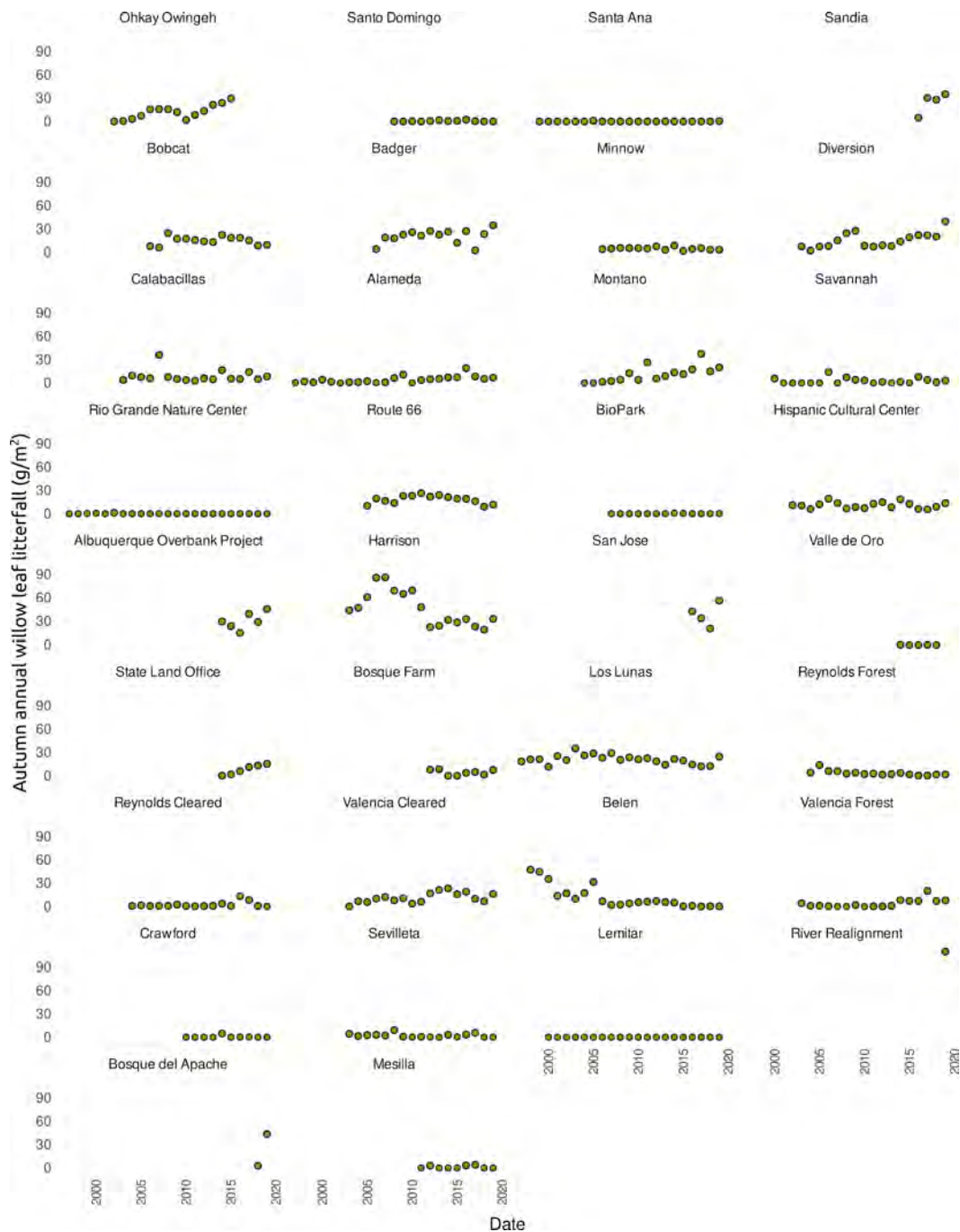


Figure 12. Autumn annual willow leaf litterfall showing the past ten years of data. BEMP sites are arranged from north to south.

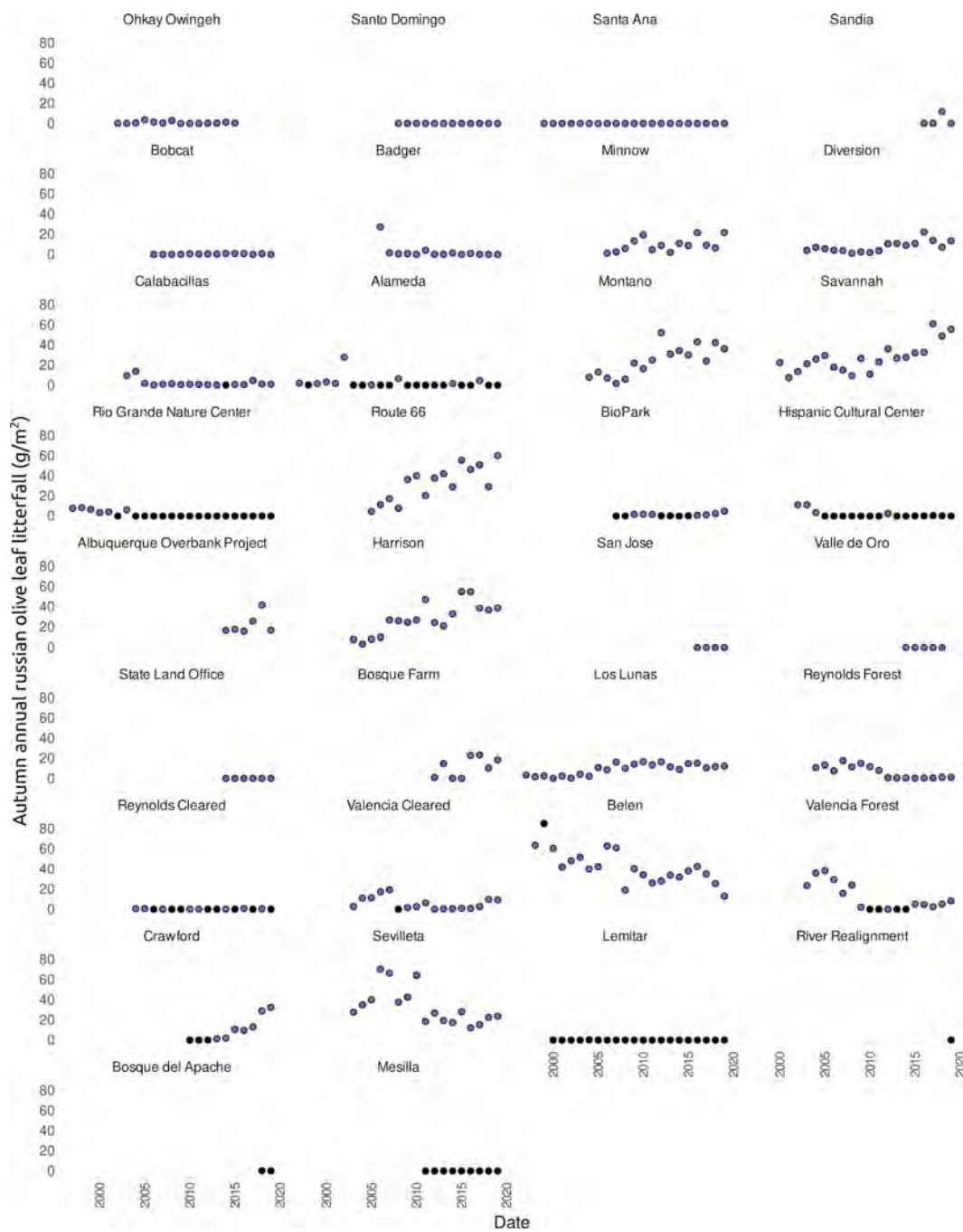


Figure 13. Annual autumn leaf litterfall for Russian olive across ten years. BEMP sites are arranged from north to south.

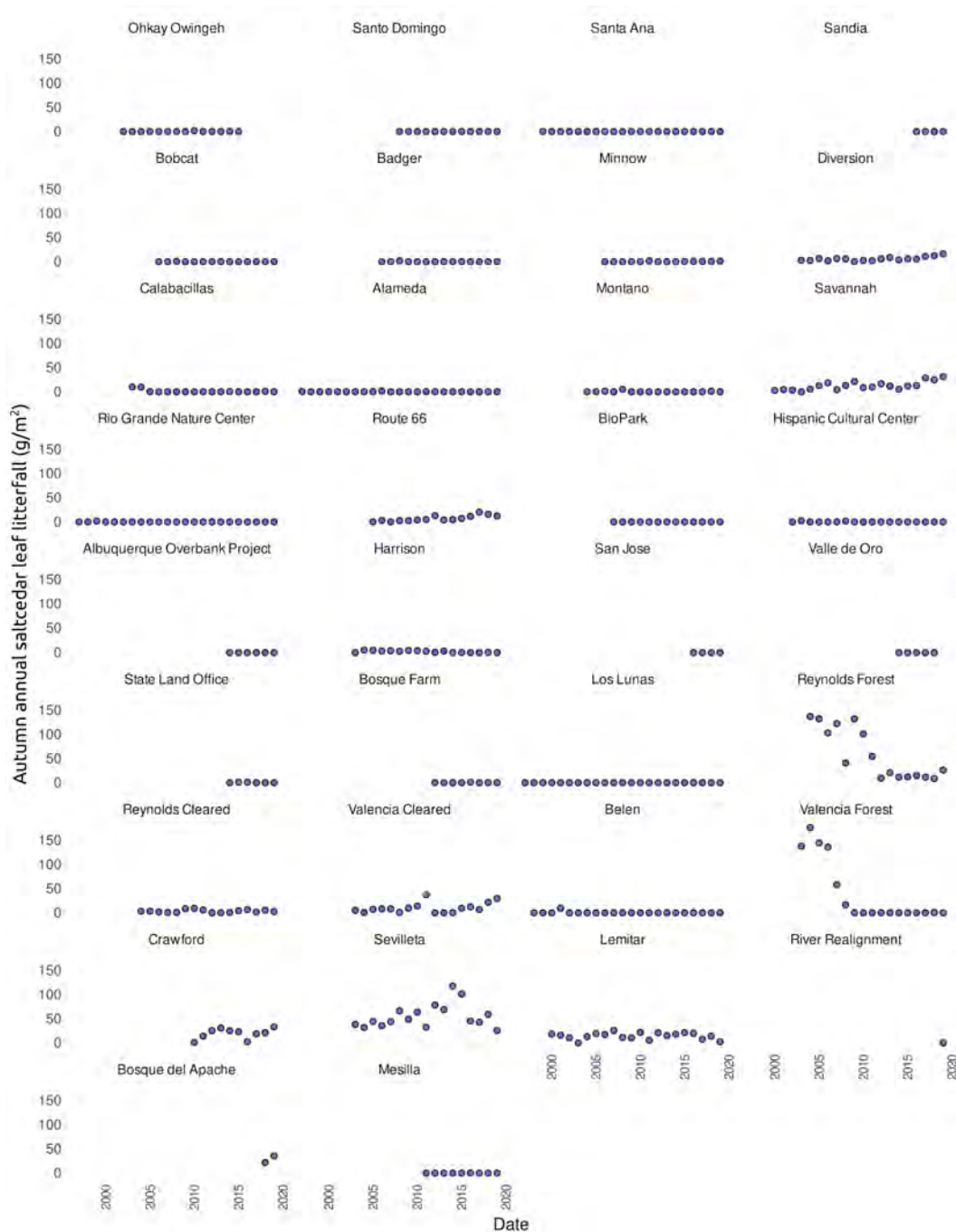


Figure 14. Annual autumn leaf litterfall for saltcedar across ten years. BEMP sites are arranged from north to south. Many sites have small amounts of saltcedar present ranging from tenths of a gram to several grams.

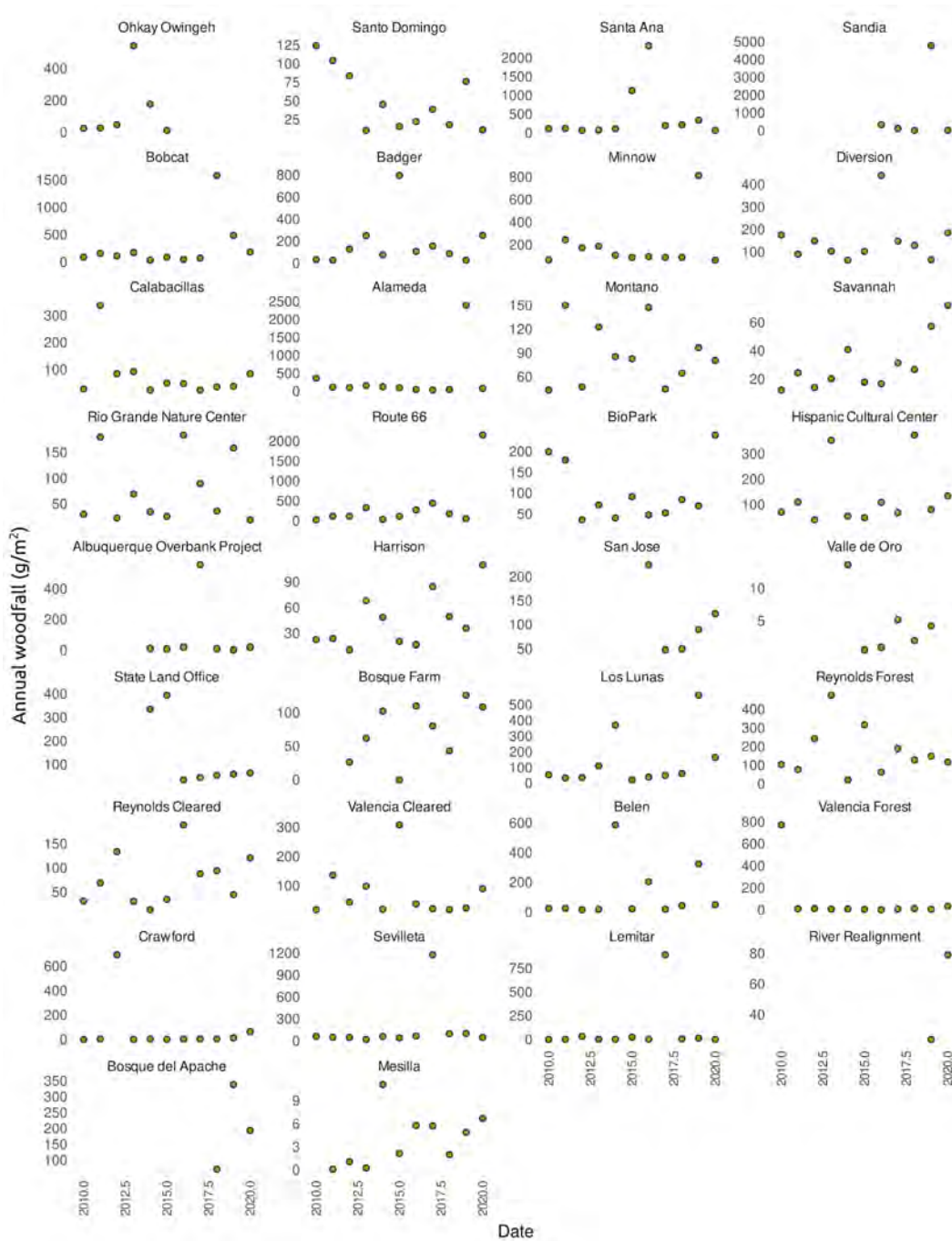


Figure 15. Annual woodfall across ten years. BEMP sites are arranged from north to south. Due to the large range of wood weights all y-axis are freely scaled within a site.

Native cottonwood and willow productivity (leaf litterfall) are increasing at several sites; most typically sites that have undergone earth removal and/or pole planting. Native cottonwood and willow productivity is stable or slowly declining at the majority of BEMP sites. Seven sites show increasing willow cover, while four show noticeable declines (Figure 12). Some BEMP sites show increasing productivity of Russian olive and saltcedar (leaf litterfall) over time. In the Russian olive and saltcedar leaf fall figures, many trends appear flat; this is due to several orders of magnitude difference in leaf litterfall. The following sites are slowly gaining (0.01 to tens of grams annually) saltcedar leaf litterfall: Sandia, Minnow, Diversion, Alameda, Savannah, Route 66, Biopark, Albuquerque Overbank Project, Bosque Farms, Valencia Cleared, and Crawford. Ten sites show increasing Russian olive, while two sites show noticeable declines over time that are unrelated to exotic clearing events and instead are a slow decline of dense, older stands.

Wood fall is variable across sites and often stochastic. Wood fall is a good indicator of tree senescence, but is not a direct measure, as limbs that die can stay in the canopy layer for years. Limbs tend to come down following storm events and high winds. We have also observed large, dying cottonwood trees falling down following flood events.

8.0 Vegetation surveys to monitor changes in plant cover

Vegetation cover surveys are conducted in August-September each year by botanists. Line intercept methods are used to monitor plant species along ten 30m transects at 27 sites (Table 1). Herbarium work (identification of species) was recently finished for 2019 data and most of the data have been QA/QCd and are included in this report. 2020 data are still being processed and run through the QAQC protocols; 2020 reporting on vegetation data has been delayed due to limitations of operating under COVID-19 restrictions.

Full monitoring methods can be found at:

<https://secureservercdn.net/45.40.146.38/659.541.myftpupload.com/wp-content/uploads/2016/01/vegetation-monitoring-directions.pdf>

There are 25 species that commonly occur across sites (occurring in at least 18 of the 27 sites monitored). Table 2 shows that Rio Grande cottonwood, Canadian horsetweed, foxtail barley, Russian olive, and squirreltail are the five most common species being found across 25 plus sites over twenty years.

Table 2. Dominant plant species based on species presence at 18 or more sites, using twenty years of vegetation survey data. Species codes in bold have detailed annual plots in the figures below.

Species code	Common name	Scientific name	Number of sites present
PODEW	Rio Grande cottonwood	<i>Populus deltoides ssp. wislizenii</i>	29
COCA5	Canadian horsetweed	<i>Conyza canadensis</i>	27
HOJU	foxtail barley	<i>Hordeum jubatum</i>	27
ELAN	Russian olive	<i>Elaeagnus angustifolia</i>	26
ELEL5	squirreltail	<i>Elymus elymoides</i>	26
SAEX	coyote willow	<i>Salix exigua</i>	26
SATR12	tumbleweed	<i>Salsola fragus</i>	26
SPORO	dropseed	<i>Sporobolus sp.</i>	26
BASC5	kochia	<i>Bassia scoparia</i>	25
MUAS	scratchgrass	<i>Muhlenbergia asperifolia</i>	25
LASE	prickly lettuce	<i>Lactuca serriola</i>	24
MACA2	hoary tansyaster	<i>Machaeranthera canescens</i>	24
SAGO	Goodding's willow	<i>Salix gooddingii</i>	24
TACH2	saltcedar	<i>Tamarix chinensis</i>	24
HEAN3	common sunflower	<i>Helianthus annuus</i>	23
SPAI	alkali sacaton	<i>Sporobolus airoides</i>	23
MEOF	white sweetclover	<i>Melilotus officinalis</i>	22
SPCR	sand dropseed	<i>Sporobolus cryptandrus</i>	22
AMPS	Cuman ragweed	<i>Ambrosia psilostachya</i>	20
CHAMA15	Gray sandmat	<i>Chamaesyce sp.</i>	20
DISP	inland saltgrass	<i>Distichlis spicata</i>	20
FOPUP	New Mexico olive	<i>Forestiera pubescens var. pubescens</i>	20
ULPU	Siberian elm	<i>Ulmus pumila</i>	20
CAREX	sedge	<i>Carex sp.</i>	18
MELIL	sweetclover	<i>Melilotus sp.</i>	18

The dominant native species (both woody and understory) did not have large changes even after the flooding in 2017. The flooding event in 2019 will be captured in the 2020 data which is still being processed. In Figure 16 we still see both slow and dramatic declines in cottonwood cover at senescing sites. Santa Ana's loss of cottonwood cover at the BEMP site has not recovered. As cottonwood cover has declined at Santa Ana, exotic understory cover of both Kochia and tumbleweed have increased. Alameda, BioPark, and the Rio Grande Nature center are examples of the slowly senescing but not

recovering cottonwood cover. BEMP sites that were involved in restoration works, such as Harrison, Crawford, Belen, and Reynolds Forest, show gains in the cottonwood cover. These gains are tied to management decisions (bank lowering, installing swales, pole planting, and large scale soil removal) that decreased the depth to groundwater so seedlings and saplings could take hold.

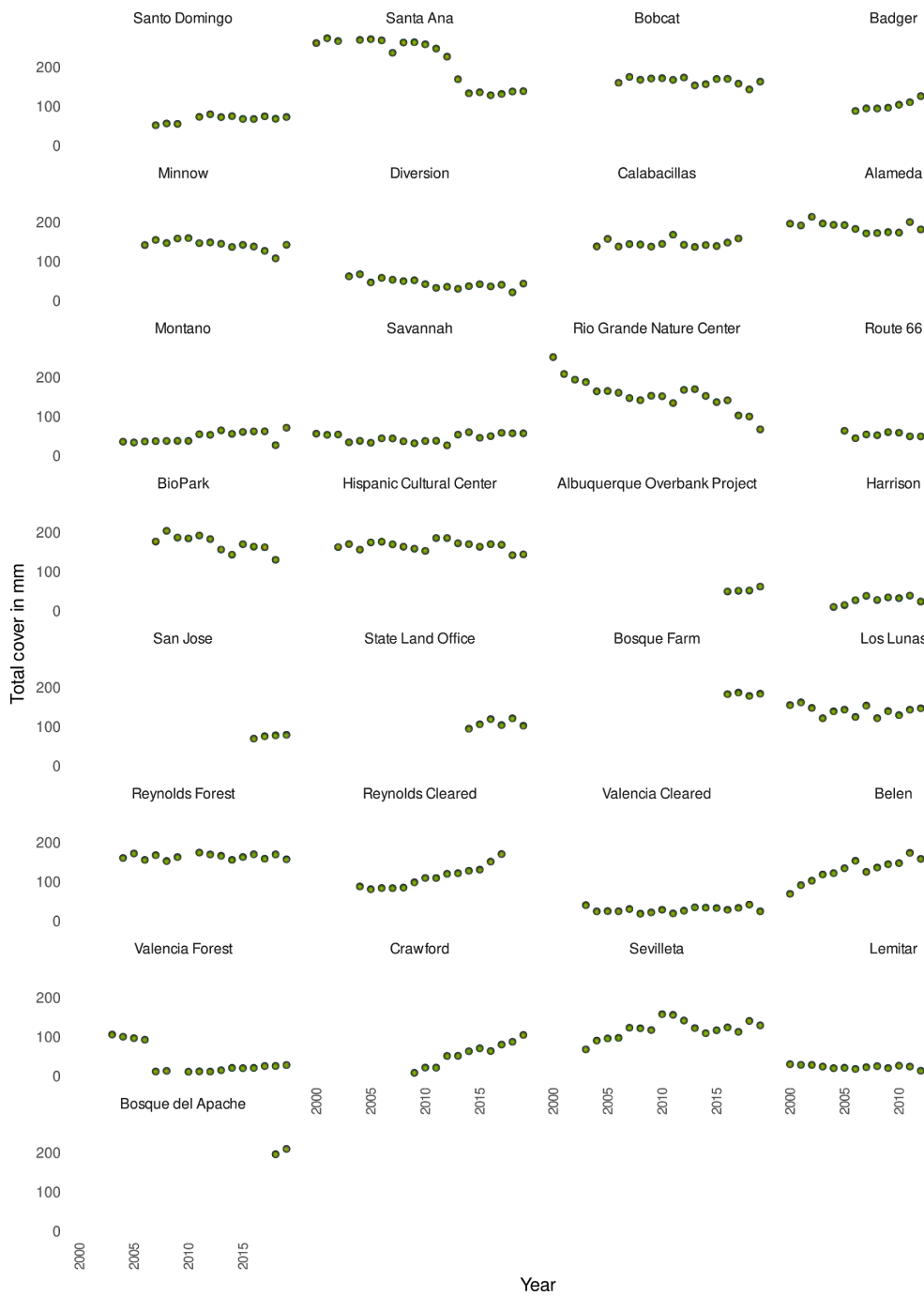


Figure 16. Annual cottonwood cover in millimeters from the vegetation surveys across BEMP sites. Sites are arranged from north to south.

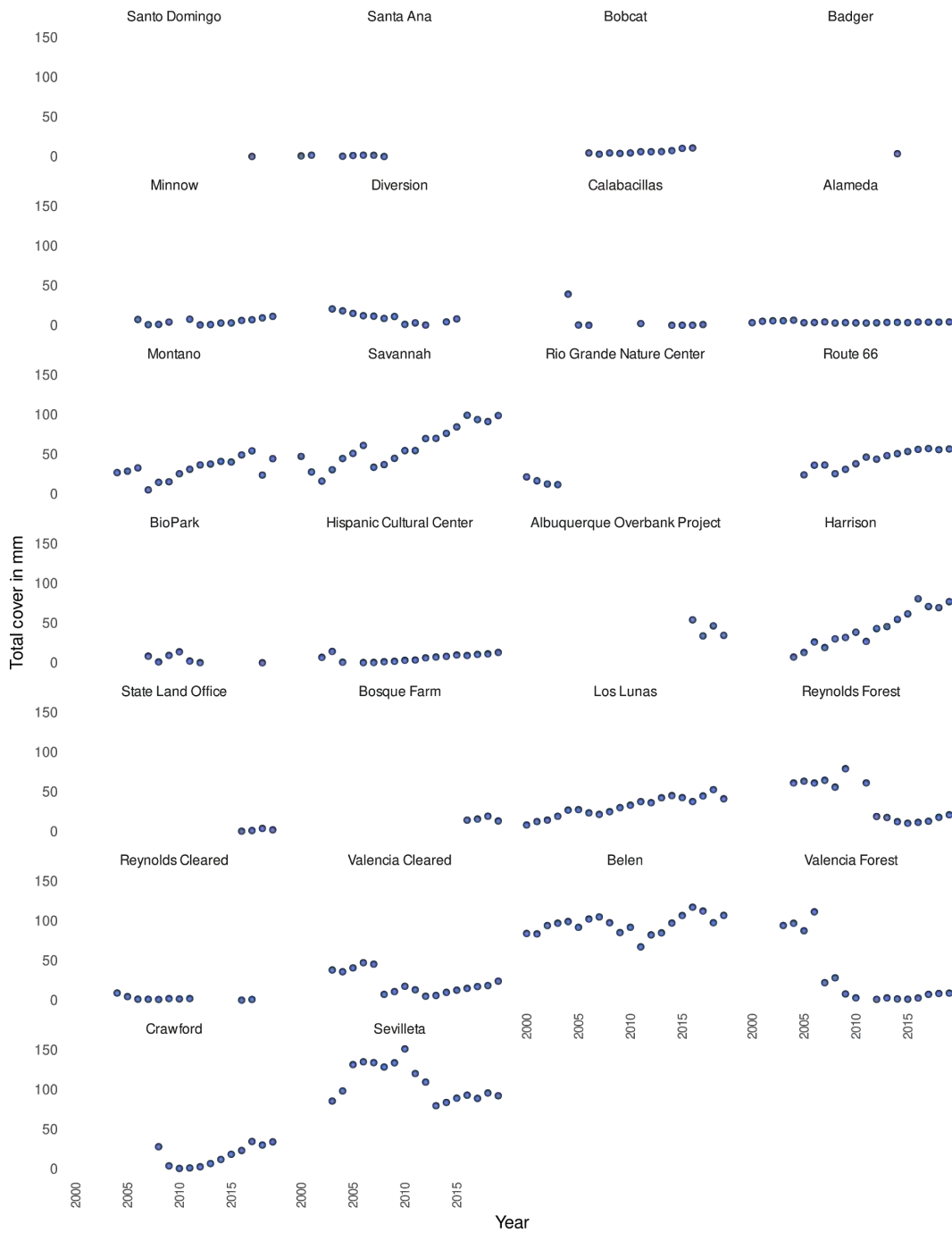


Figure 17. Annual Russian olive cover in millimeters. BEMP sites are arranged from north to south.

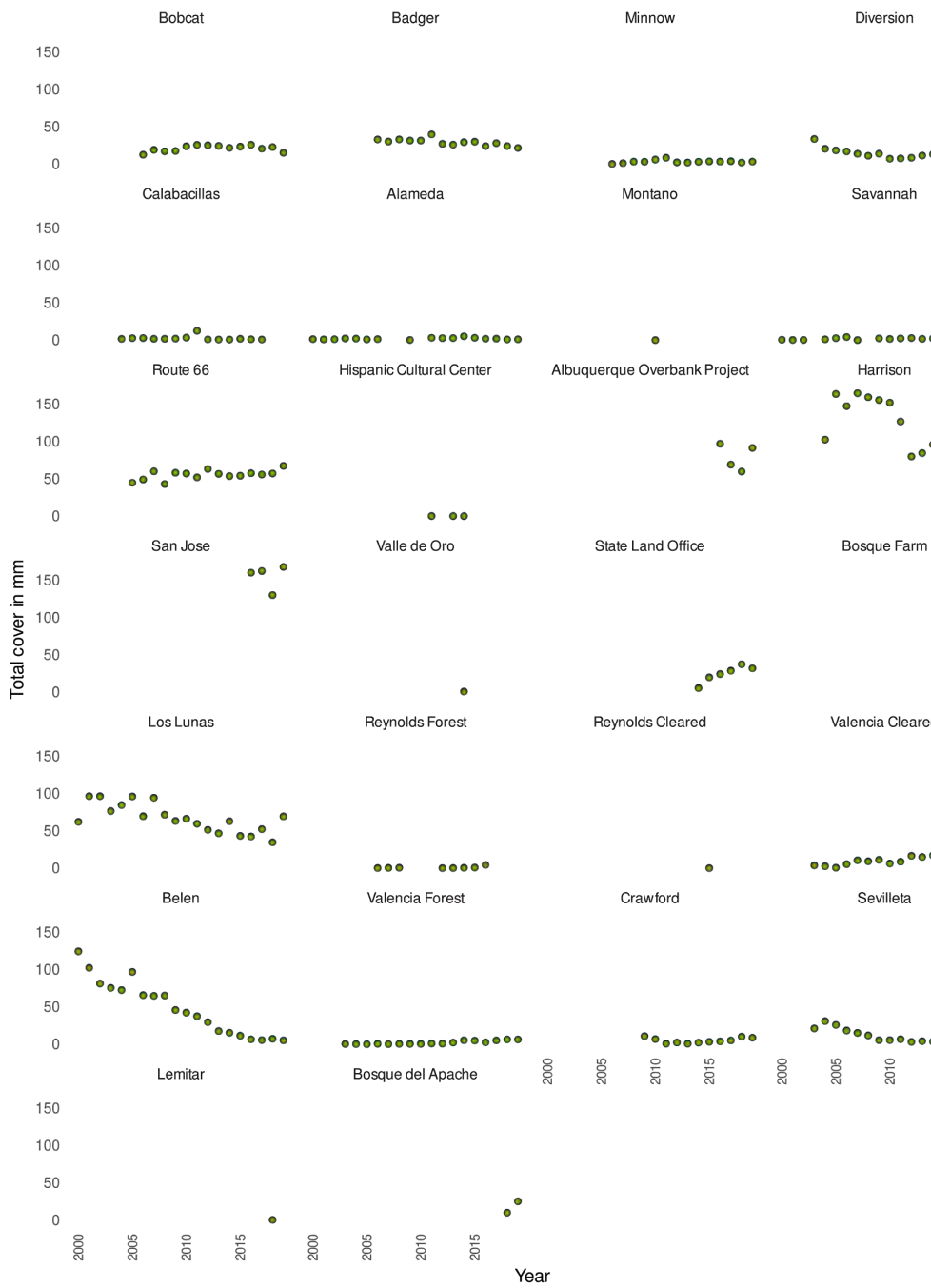


Figure 18. Annual coyote willow cover in millimeters. BEMP sites are arranged from north to south.

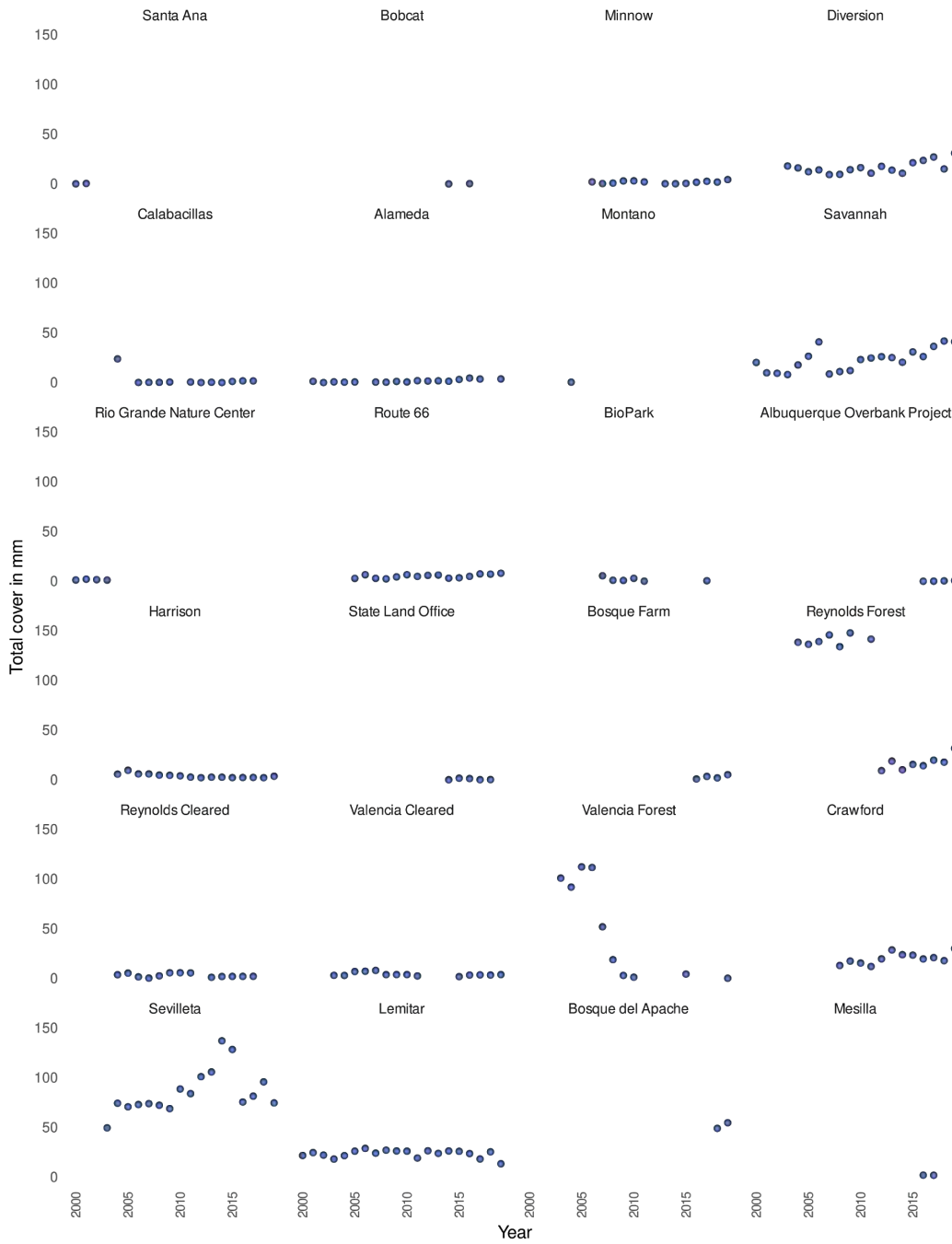


Figure 19. Annual saltcedar cover in millimeters. BEMP sites are arranged from north to south.

9.0 Arthropods as indicators of ecosystem transitions

Arthropods were collected at 26 sites in May, June and September 2018 (Table 1). Over 57,000 arthropods were identified in 2018 with over 200 unique identifications made. 2018 arthropod abundance and richness are presented below. 2019 and 2020 arthropod collections are being processed.

Full methods monitoring methods can be found at:

<http://bemp.org/wp-content/uploads/2016/01/pitfall-monitoring-directions-and-arthropod-identification.pdf>

Collembola (springtails) have been shown to be effective bioindicators of ecosystems; however, their strong preference for ephemeral microhabitats, our difficulty in consistently trapping specimens, and the large variation in abundances make their presence in BEMP pit-traps variable and have the potential of skewing data. For example, in 2018 during the October collection at the Valle de Oro site four of the 20 pit-traps contained a combined total of greater than 5,000 collembolans with more than 500 collembolans captured per trap. This totaled more than 70% of all arthropods captured at that site for 2018 while 80% traps processed for Valle de Oro in that year contained no representatives of this group. Since these numbers have such a dramatic effect on site abundance numbers, collembola have been included in richness analysis for the sites but have been excluded from abundance counts for 2018.

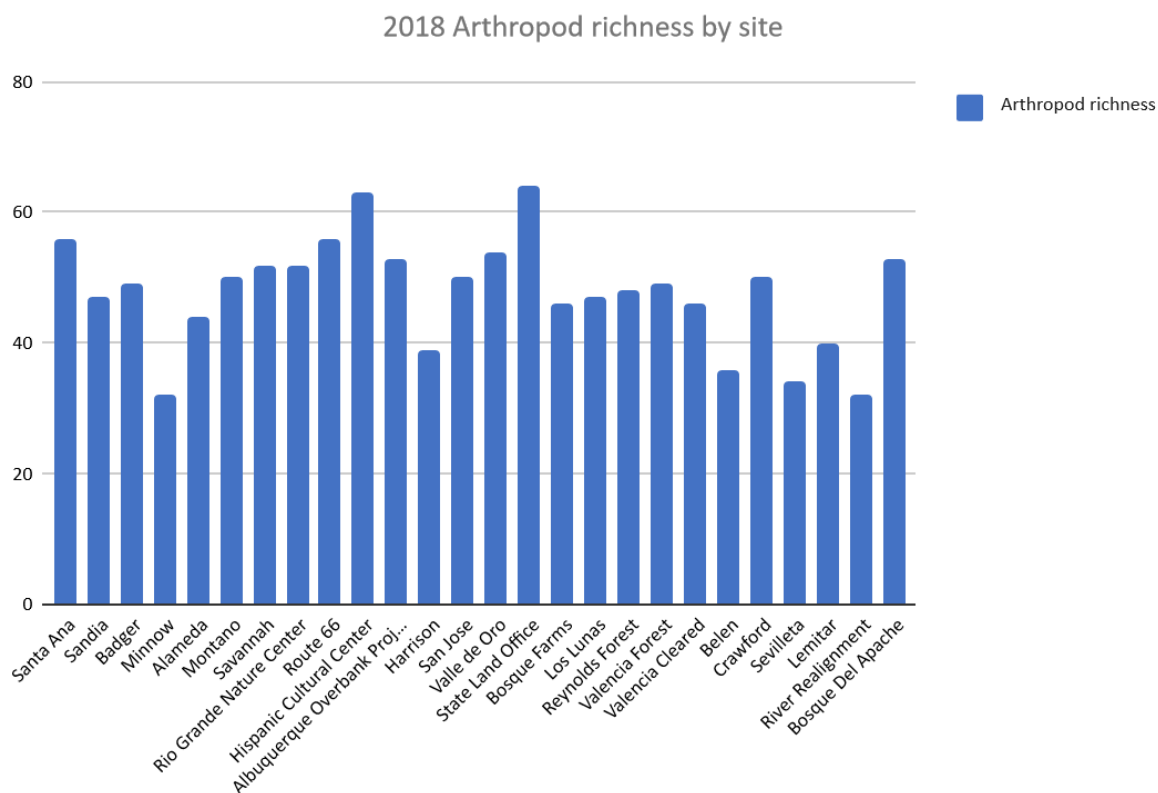


Figure 20. Arthropod richness per site for 2018. Sites arranged geographically north to south.

Total arthropod abundance for 2018 can be seen in Figure 21, in orange. Bosque Farms, Los Lunas and Valencia Cleared, all sites in the Valencia reach, show the greatest arthropod abundance for 2018. Much of this is driven by isopod abundance.

Annual Isopod abundance for 2018 can be seen in Figure 21, in blue.

Isopods (*Armadillidium vulgare* and *Porcellio laevis*), commonly known as pill-bugs and sow-bugs, are non-native terrestrial crustaceans. These arthropods function trophically as detritivores, aiding in decomposition of biological matter including leaf litter. These arthropods are most active at night, requiring high levels of humidity to thrive, and will quickly desiccate in dry environments. They are, however, efficient at finding these suitable microclimates in an otherwise seemingly arid environment. Thus, isopods are useful indicators of relative moisture levels and ground coverage at sites. In 2018, isopods represented the dominant arthropod captured in 13 of the 26 the sites collected: Alameda, Route 66, Harrison, San Jose, State Land Office, Bosque Farms, Los Lunas, Reynolds Forest, Valencia Forest, Valencia Cleared, Belen, Crawford and Sevilleta. In several sites from the Valencia reach,

isopods compose more than 90% of the arthropod abundance for these sites. Abundances of isopods vary from year to year and likely depend on annual precipitation and groundwater levels. However, large numbers of isopods are regularly encountered in sites that are prone to seep flooding, contain swales, and have ground cover of detritus.

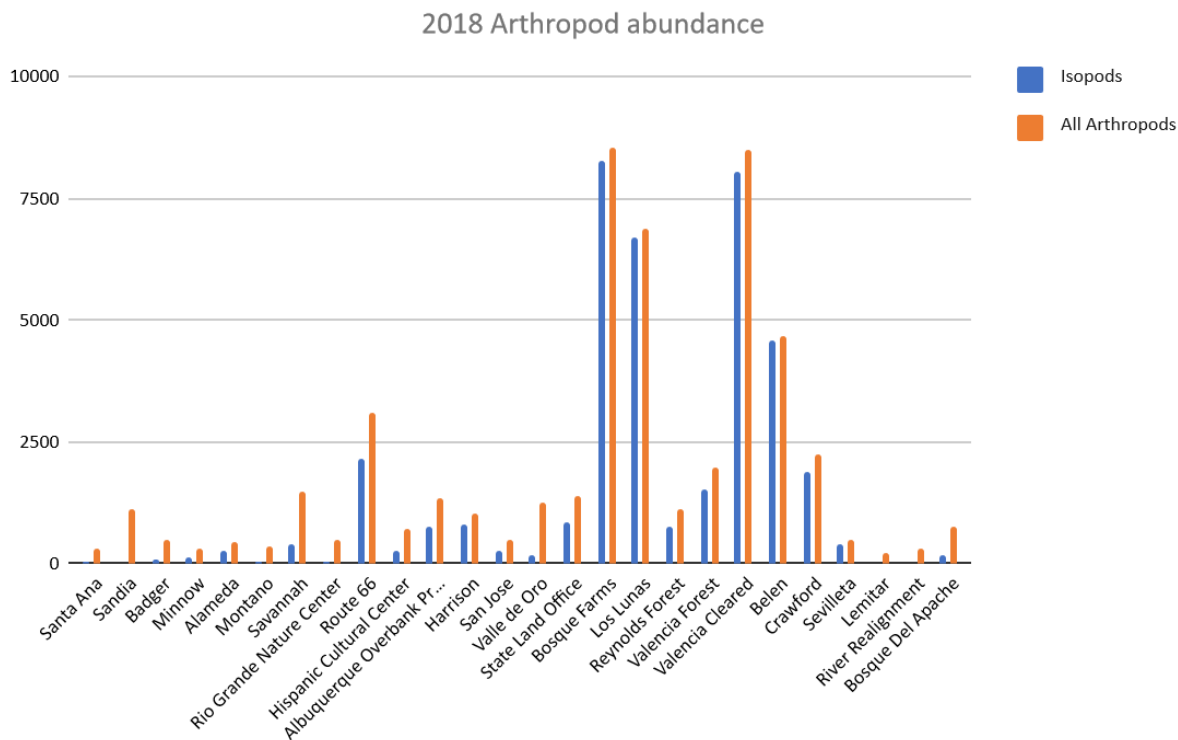


Figure 21. Isopod (blue) and all arthropod abundance (orange) per site for 2018 excluding Collembola. Sites arranged geographically north to south.

Annual Beetle abundance for 2018 can be seen in Figure 22.

Many beetles in the family Carabidae (ground beetles) are useful as indicators of relatively more mesic habitats while many beetles in family Tenebrionidae (darkling beetles) are useful as indicators of more xeric habitats. Although habitat preference is varied species to species with such large and diverse families, these families are still quite useful as environmental indicators. For example, Valencia Cleared and Valencia Forest are adjacent sites in the Valencia reach and despite their proximity the sites are notably different. The Valencia Cleared site was cleared of exotic vegetation in 2003 and 2008. This site is characterized with having a sparse but present cottonwood canopy, large wolfberry patches and a ground covering of yerba mansa, a plant known to thrive in moist soils. This site was also subjected to

seep flooding in 2017. The Valencia Forest site, just south of Valencia Cleared was subjected to a fire in 2007, clearing the site of cottonwoods and now having an almost entirely open canopy dominated by kochia and tumbleweeds. In 2018, 70% of beetles captured in Valencia Forest were identified as being in the family Tenebrionidae and only 14% were identified as being in the family Carabidae. In contrast, 48% of the beetles from Valencia Clear were identified as being in the family Carabidae and 41% in the family Tenebrionidae. This pattern can be seen at many other sites where darkling beetles tend to be more abundant in sites recognized as being drier. The higher relative abundance of darkling beetles to ground beetles at the State Land Office is unexpected as this site has swales transecting the site and is prone to annual seep flooding. However, *Omophron*, a genus of ground beetle, was identified in large numbers from the 2017 and 2019 pit traps from the State Land Office site and are known to inhabit very wet sandy soils, typically occurring on the banks of rivers and ponds. These beetles have not yet been identified at any other BEMP sites.

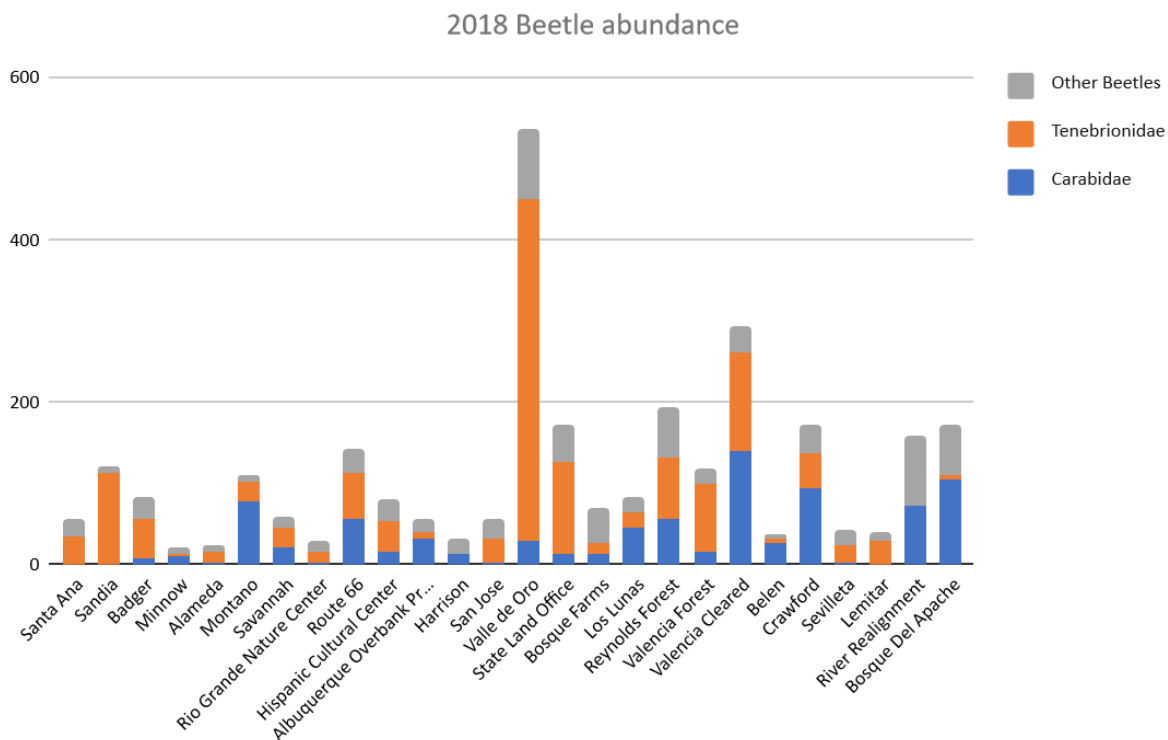


Figure 22. Beetle abundance per site for 2018 highlighting Carabidae (blue) and Tenebrionidae (orange). Sites arranged geographically north to south.

Araneae (spider) and Carabidae (ground beetle) abundance.

Many Araneae (spiders) and carabid beetles (ground beetles) function as ground dwelling generalist arthropod predators and are viewed as top predators in arthropod systems, making them ecologically important regulators of decomposers. Both of these arthropods have also been shown to be strongly associated with habitat structure responding to litter type, depth, soil disturbance, moisture and temperature. Remnant sites have been shown to contain both a higher abundance and richness of these arthropods. Monitoring the presence and abundance of carabid beetles and spiders help to gain an understanding of not only site composition but how various sites are responding to disturbances over time. Spider abundances are highest in the two southern sites; Bosque del Apache and River Realignment. Carabidae abundances are highest at the Montano, Valencia Cleared, Crawford, Bosque del Apache and River Realignment sites.

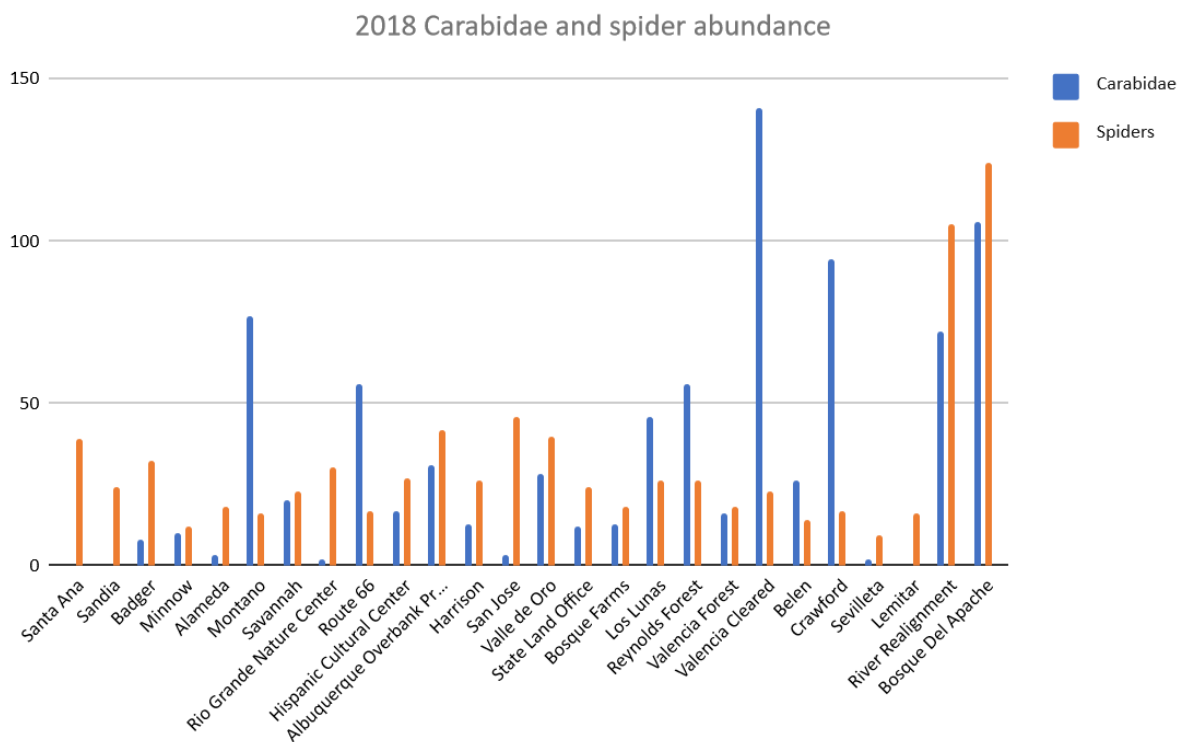


Figure 23. Carabidae and spider (top arthropod generalist predators) abundance per site for 2018 Carabidae (blue) and spiders (orange). Sites arranged geographically north to south.

Spider community structures.

In 2018, 812 spiders were identified from 18 different families. Spiders are a diverse group of generalist predators with varying habitat preferences. Many spiders hunt similar prey, therefore to avoid direct competition or becoming potential prey to other spiders, niche partitioning must occur if multiple species are to live sympatrically. A higher diversity of spiders at a given site may reflect a more heterogeneous environment. A more heterogeneous environment offers a variety of prey choices and sizes, plus the presence and type of litter as well as vegative cover provide a variety of microclimates and increased surface area for these spiders to occupy. Individual species identified within dominant spider families may be used as indicators of biotic and abiotic components specific to each site or groups of sites. For example the Gnaphosidae is a dominant spider family found at most BEMP sites. Within the Gnaphosidae, the species *Gnaphosa sericata* has only been documented from a single BEMP site, Lemitar, despite this species' large range throughout North and Central America. This spider has been known to be encountered most often in sandy dry environments, characteristics of the Lemitar site. Spider community composition separated by family for each site can be seen in Figure 24. The families Lycosidae (wolf spiders) and Gnaphosidae (ground spiders) tend to show the highest relative abundance at each site.

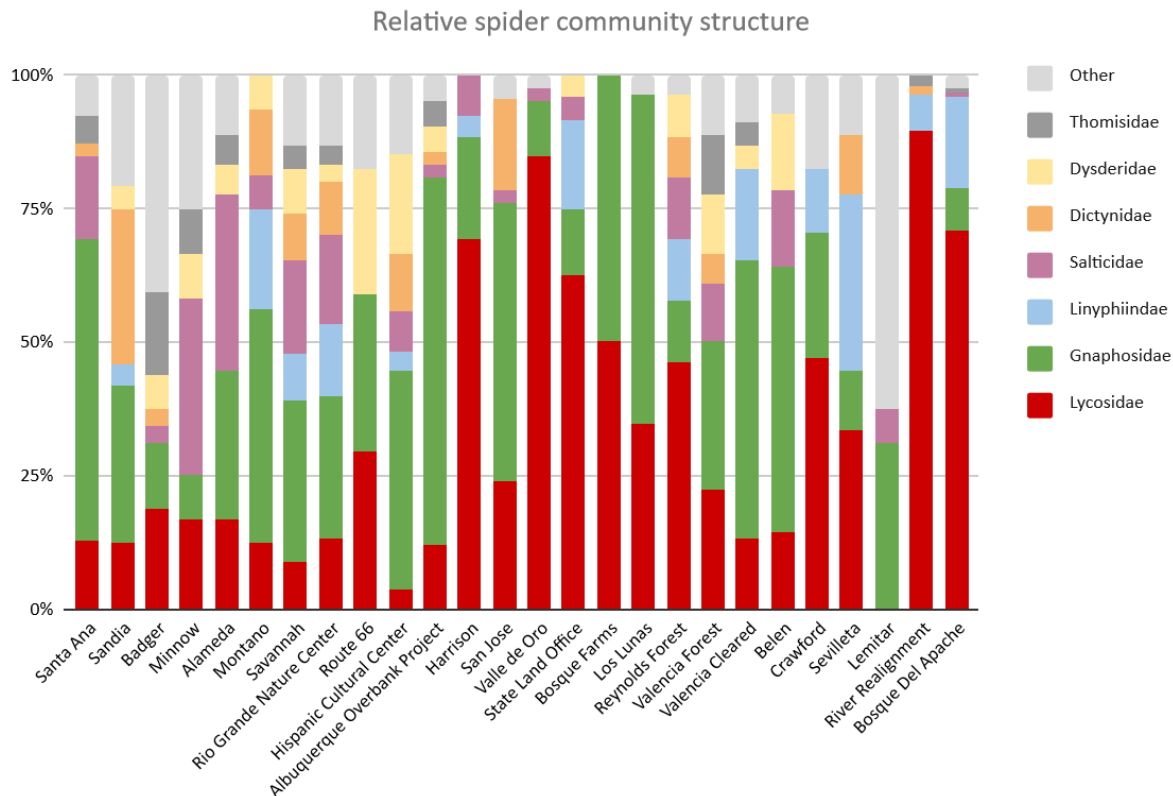


Figure 24. Percent spider community structure separated by family per site for 2018 Lycosidae (red) and Gnaphosidae (green). Sites arranged geographically north to south.

Update on the exotic spider *Marinarozelotes barbatus*.

In our 2019 annual report the exotic spider species *Marinarozelotes barbatus* (formally placed in the genus *Trachyzelotes*) was reported for the first time in New Mexico. In 2018, 44 specimens of this exotic were identified from San Jose and Harrison and Albuquerque Overbank Project sites. The abundance and location of this exotic spider will continue to be monitored.

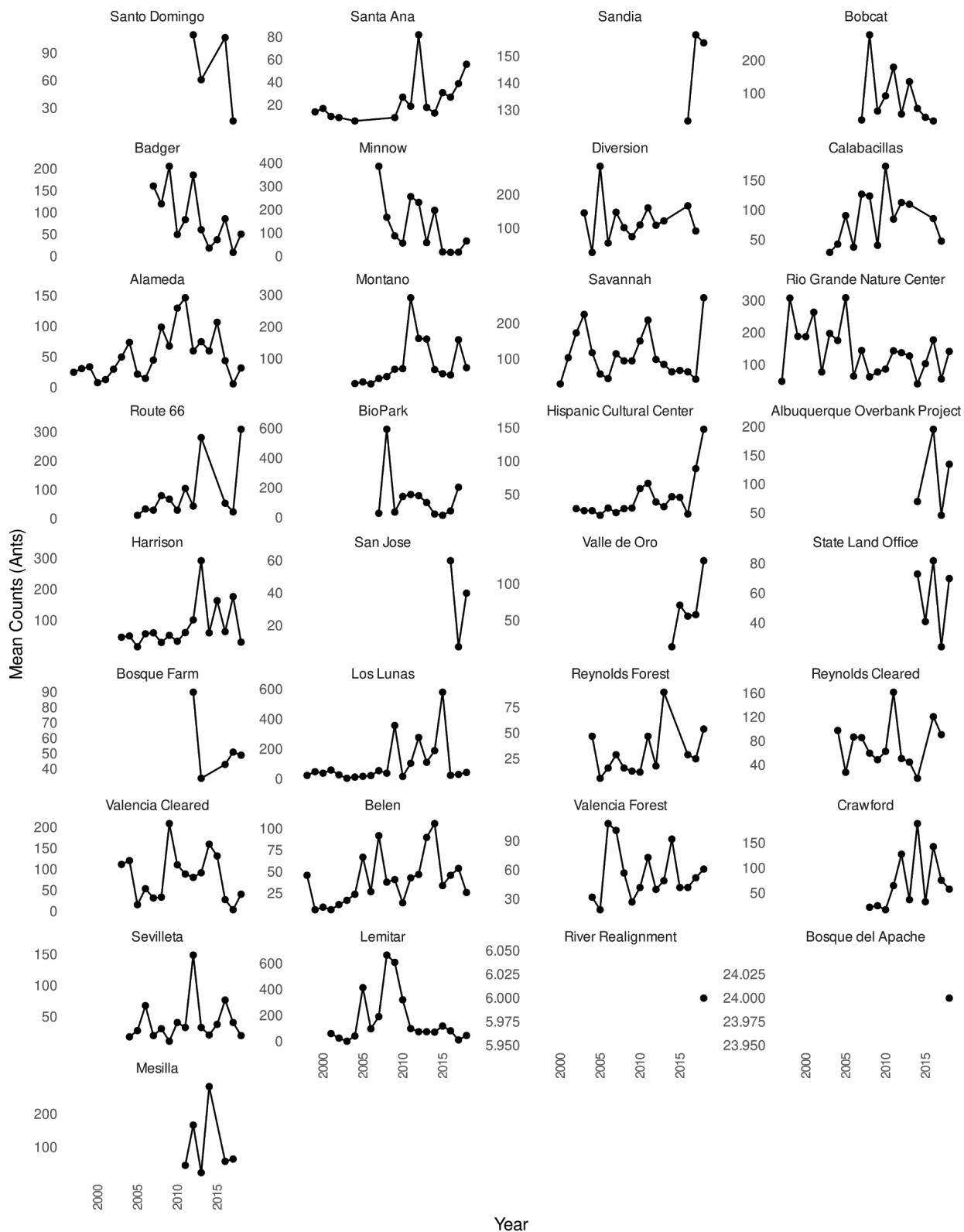


Figure 25. Fifteen year time series of ant mean abundance. Sites ordered from north to south.

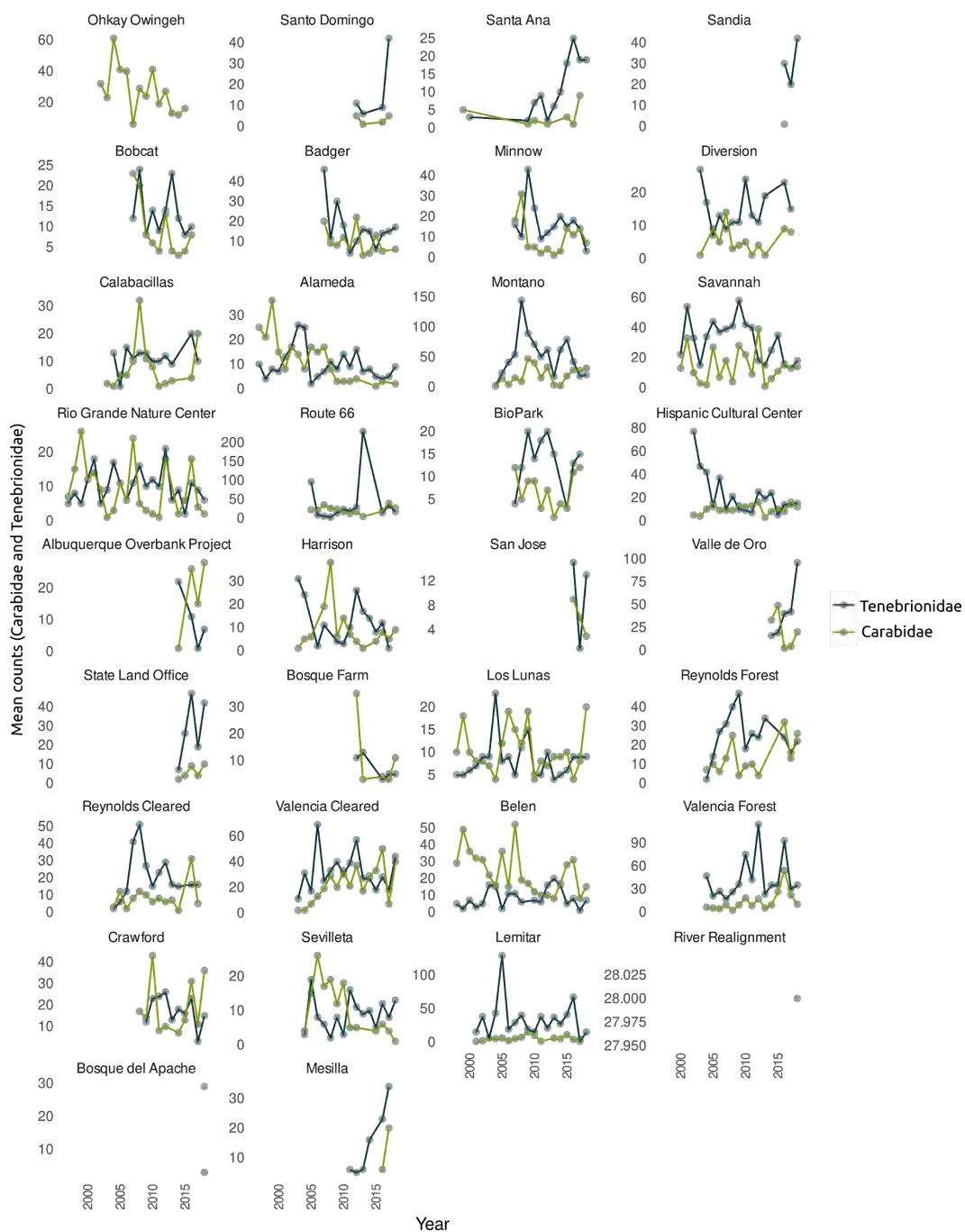


Figure 26. Fifteen year time series of Carabidae and Tenebrionidae mean abundance. Sites ordered from north to south.

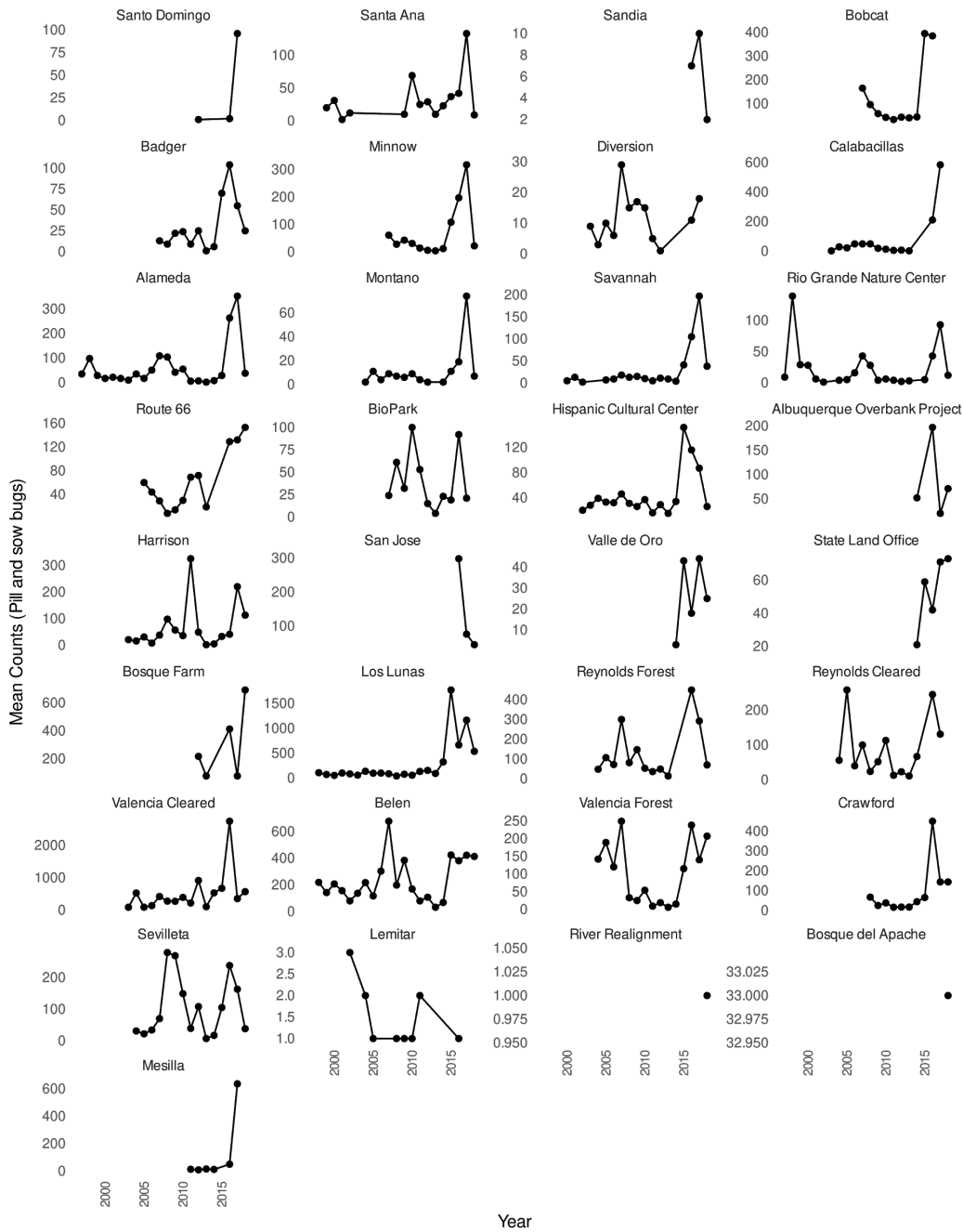


Figure 27. Fifteen year time series of isopod mean abundance. Sites ordered from north to south.

10.0 Temperature data collected at select BEMP sites

We collected temperature data from three loggers at 12 BEMP sites: 36 LogMaster temperature data loggers were attached to a tree near the canopy rain gauges, buried underground near the canopy rain gauges, and buried near the open rain gauges. Temperature data were logged hourly and downloaded annually by BEMP staff and university students. During 2019 – 2020 data were collected at the following sites: Alameda (1), Santa Ana (5), Rio Grande Nature Center (2), Rt 66 (20), BioPark (23), Albuquerque Overbank Project (AOP - 29), State Land Office (SLO - 30), Los Lunas (3), Belen (4), Lemitar (7), Mesilla (26). No data was recovered at the Savannah site due to logger malfunction and vandalism. The Santa Ana (5) site was downloaded much later in the year than the rest of the loggers due to access issues related to the COVID-19 pandemic. This resulted in a longer data collection period and an extended purple line on the graph in Figure 28.

The data were run through a visual QA/QC to make sure the plots follow the general expected pattern and historical trends. The data were then checked for the number of NA (missing data points) by site over time and for any points there were more than three standard deviations (SD) away from the z-score transformed data. The number of data points flagged as outside the 3 SD were minimal given the volume of data.

Canopy temperature loggers throughout the Middle Rio Grande from Santa Ana Pueblo through Belen recorded frigid temperatures from -10.01°C to -12.54°C . Two separate cold snaps lasted for two days each in mid December 2019 and again in early February 2020. The warmest days recorded from the canopy loggers were on July 10th and 11th with temperatures ranging from 49.21°C - 50.05°C . A warm summer heat wave throughout the valley extended from Albuquerque to Lemitar, NM with temps ranging from 35°C - 47°C . The duration of the high temperatures lasted for about four to five weeks from early July through mid August 2020. The canopy loggers are placed inside of solar radiation shields that are intended to protect the loggers from precipitation as well as dissipate heat from sun exposure. Due to the extremely high temperatures recorded on the loggers, there is suspicion that solar heat irradiance was maintained within the casing housing and artificially increased the recorded temperatures. Temperatures from the Kirtland Air Force Base for the same time-frame ranged from 27°C - 39°C . The long duration of high temperatures can place stress on already parched riparian plants particularly the cottonwood trees.

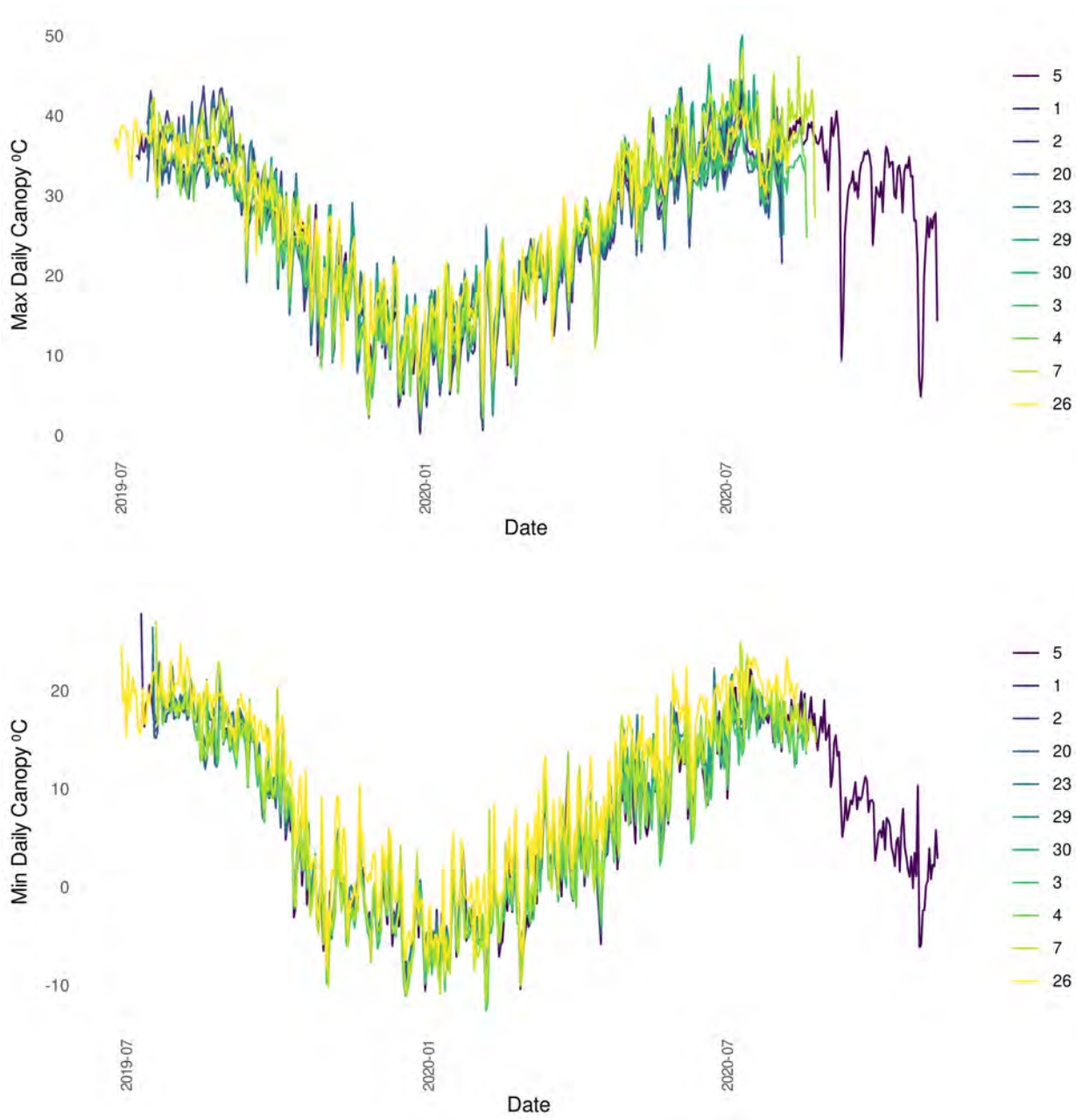


Figure 28. Maximum and minimum air temperatures from the canopy temperature loggers across 11 sites.

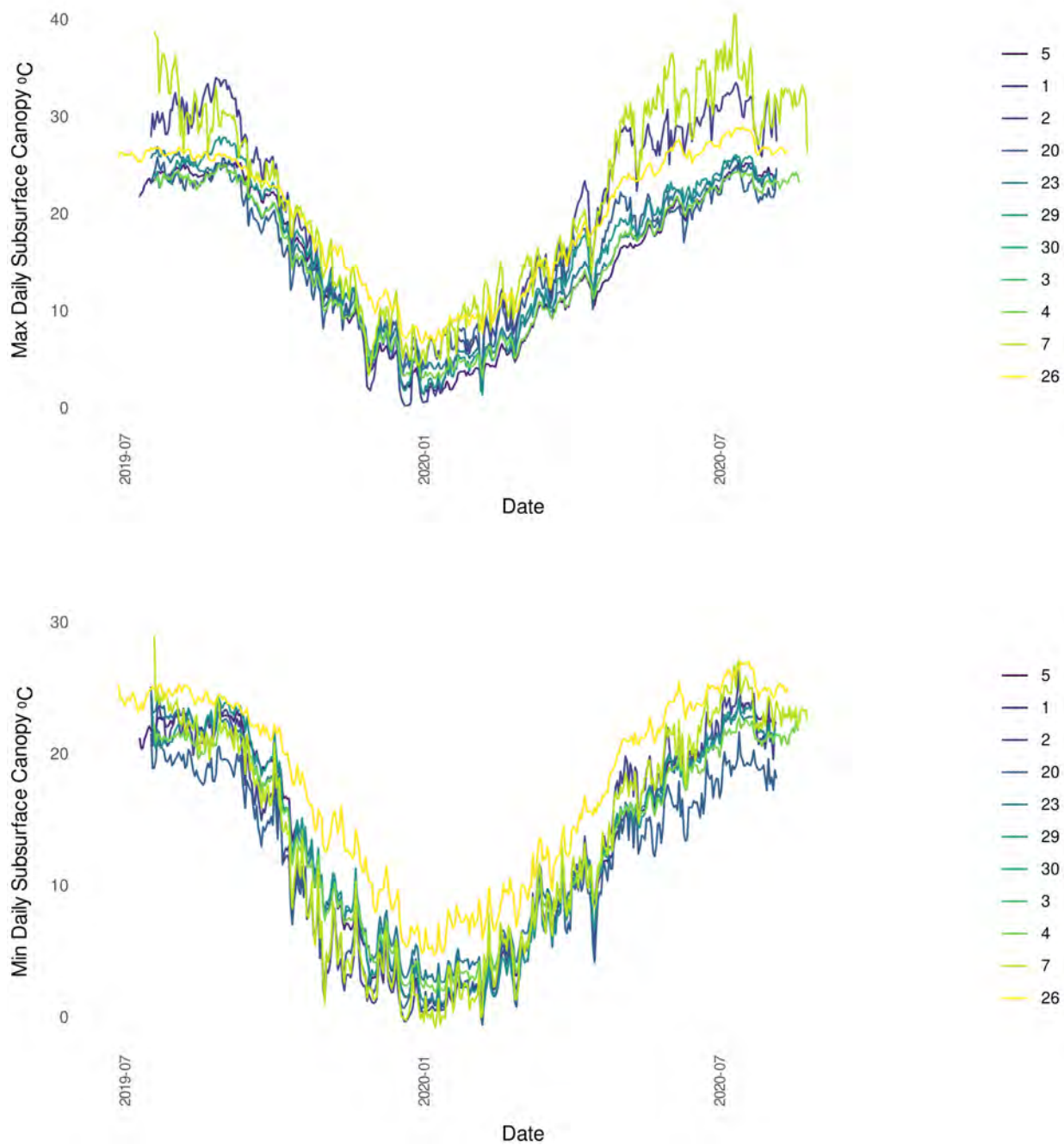


Figure 29. Maximum and minimum daily ground temperatures from the subsurface canopy temperature loggers across 11 sites.

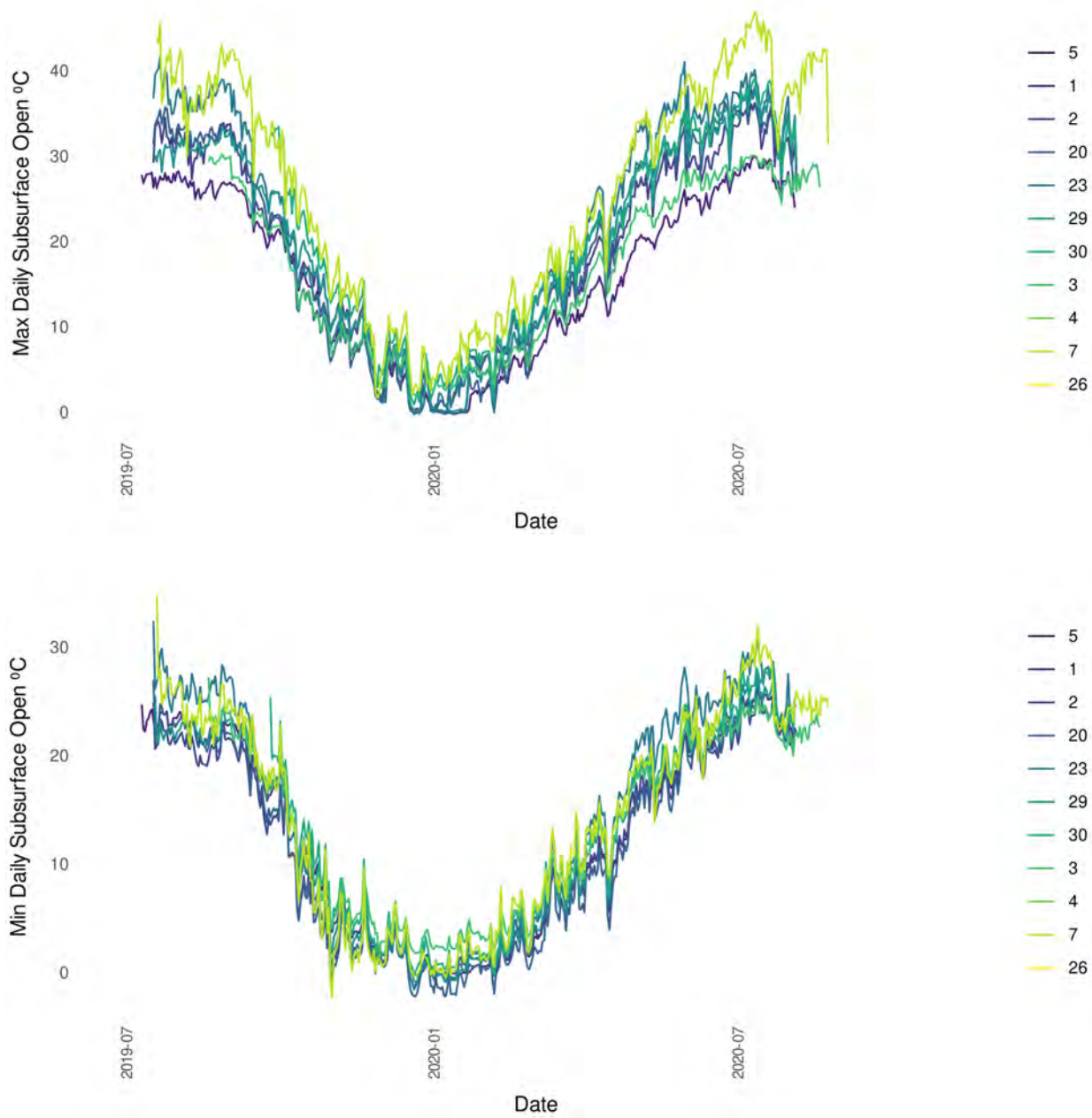


Figure 30. Maximum and minimum daily ground temperatures from the open subsurface temperature loggers across 11 sites.

11.0 Tamarisk Leaf Beetle monitoring on BEMP sites

Tamarisk leaf beetle (TLB) monitoring is conducted in May, June, July, and August each year, with additional sampling at 4 select sites (Crawford, Diversion, Route 66, and Sevilleta) in September. In 2020, BEMP monitored 16 sites (Figure 33) for the presence and abundance of tamarisk leaf beetles (*Diorhabda* spp.). 14 were established BEMP sites, with the addition of 2 sampling sites requested by the Greater Rio Grande Watershed Alliance (GRGWA): Rio Abajo in Belen and San Cristobal Ranch in Lamy, NM. Due to restrictions resulting from the COVID-19 pandemic, BEMP was unable to continuously monitor previous sampled sites on sovereign territory such as Pueblo of Santo Domingo and Sandia Pueblo.

At each site, five saltcedar/tamarisk trees are marked and sampled using sweep nets for TLB, with photos taken from a set photo point to assess tree health over time. BEMP has been monitoring the spread and distribution of the tamarisk leaf beetle since May of 2013. The beetle appears in the late spring and is present throughout the summer months. TLB adults, early and late larvae, and egg masses are counted, as are tamarisk splendid weevils, tamarisk leafhoppers, ants, and spiders. Percent defoliation (brown and yellow), refoilation, canopy, and dead branches are estimated for each tree. Full methods found can be found in BEMP's annual TLB report, available upon request.

TLB populations were low to absent at most sites in 2020 (Figure 31). There were only four sites, Lemitar, Valencia Cleared, Diversion and Rio Abajo, that had five TLB adults in any given month. Otherwise, counts of TLB adults were zero or fewer than five. The only exception was June at Sevilleta, where tree #1 had 1375 adults, tree #2 had 366, and the remaining trees had fewer than three adults. It is possible that the long duration of flooding in 2019 at many of the sites may have led to declines in beetle emergence.

Despite the low TLB numbers, defoliation levels ranged from 0 to 100% at the sites. Defoliation due to the tamarisk leafhopper, which results in yellow foliage, ranged from 0 to 60%, while defoliation due to the TLB, which results in brown/dead foliage, was 0 to 100%. Similarly, total defoliation (which is both yellow + brown defoliation) ranged from 0 to 100%. The high defoliation levels at some sites underline the importance of the full range of monitoring, as the beetle populations were likely missed on the specific sampling date, but the evidence of beetle damage was still observable and quantifiable.

This evidence of beetle damage, and overall decline in canopy coverage of tamarisk over the last few years, is a consistent data point that reflects the alteration of habitat and other potential ecological impacts due to the presence of TLB.

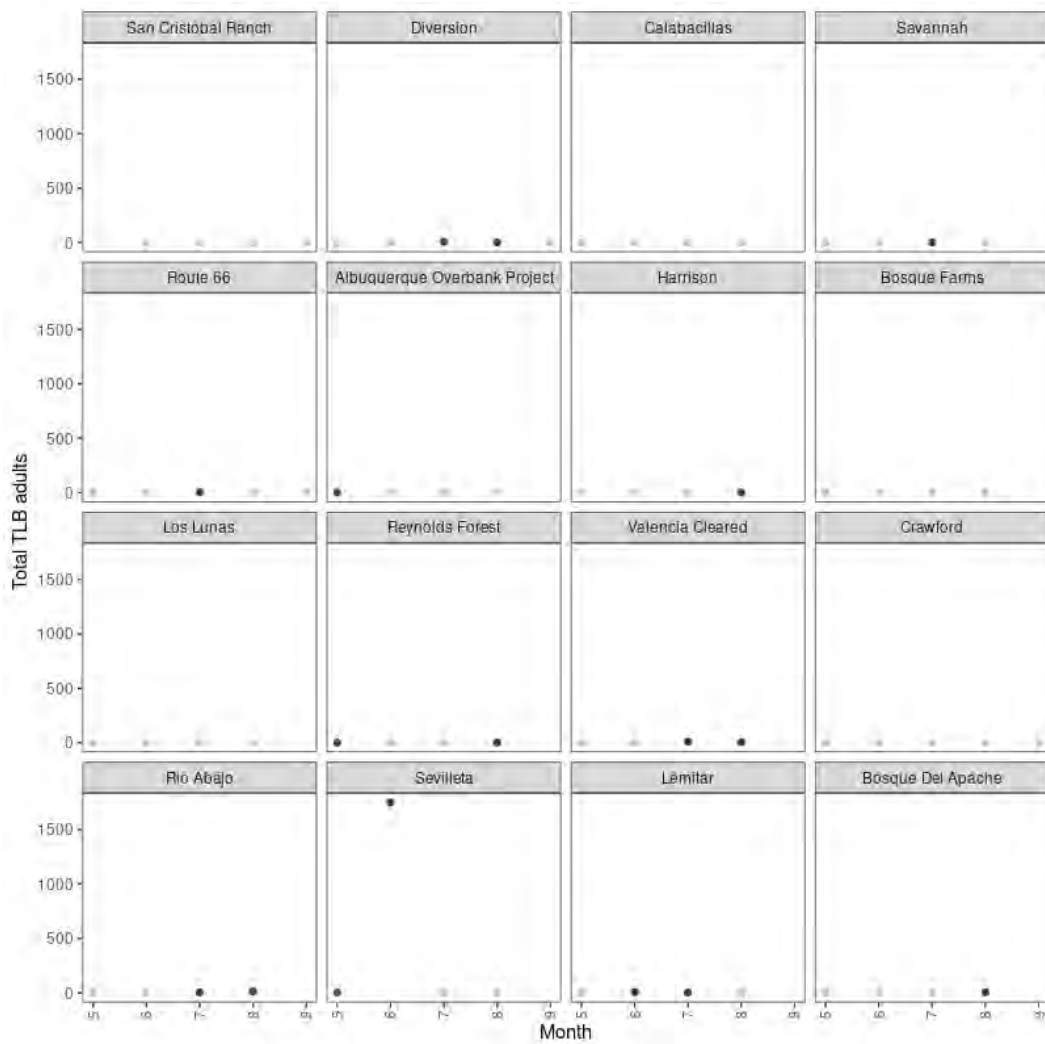


Figure 31. Total number of TLB adults collected at 16 different monitoring sites from May through August (a subset of 4 sites were sampled in September).

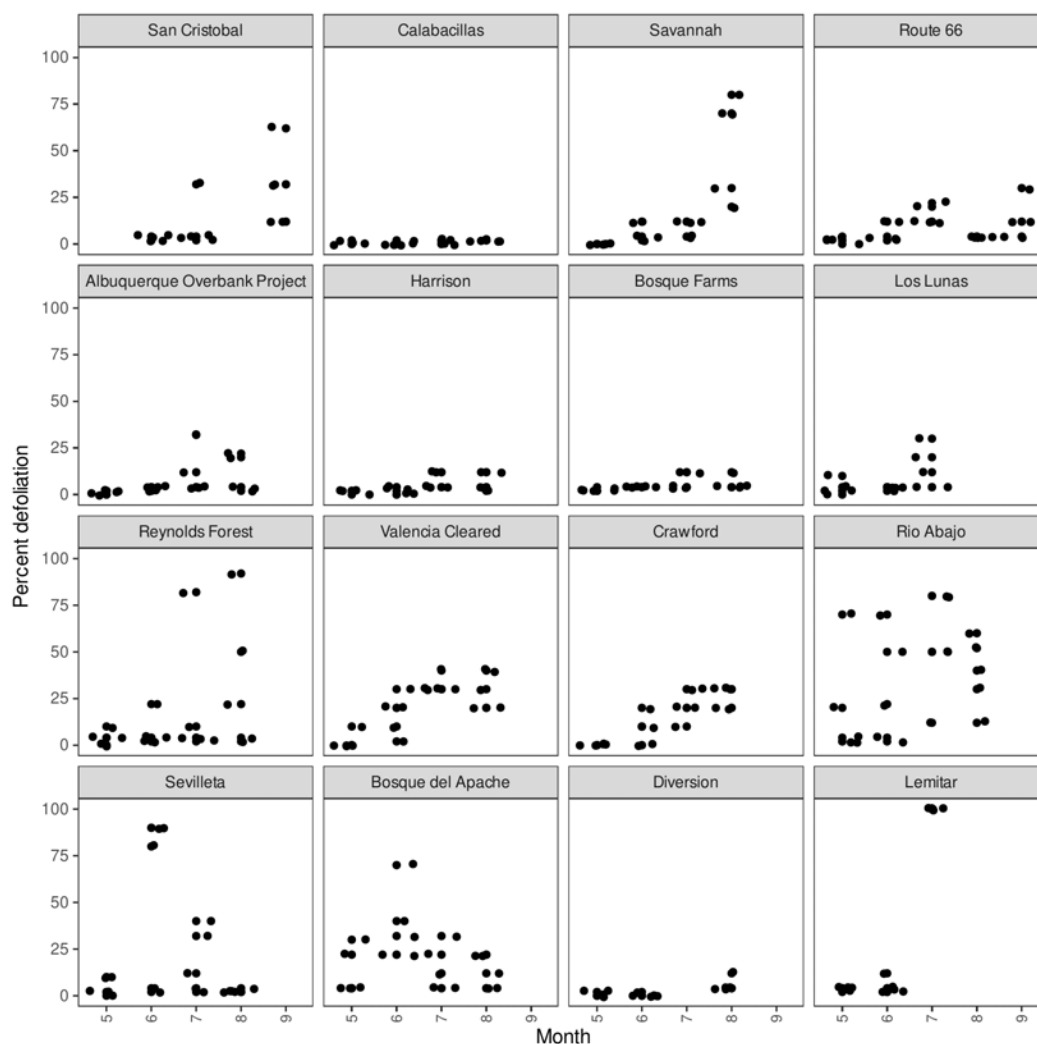


Figure 32. Percentage of saltcedar defoliation from trees sampled at 16 different monitoring sites from May through August (a subset of 4 sites were sampled in September).

Since the beginning of TLB monitoring in 2013, BEMP has observed cyclical patterns of population abundance based on region. In 2019, BEMP observed the greatest number of TLB adults in the southern most BEMP sites. In 2020, BEMP observed the same trend. Based on previous collections, it is not unreasonable to suspect that TLB populations will reach their peak in 2021 in southern BEMP sites, or that they have already done so in 2020, and will decrease the following year. Many defoliators exhibit outbreak cycles or eruptive population increases which result in high levels of defoliation. TLB populations appear to follow this “boom-bust” pattern.

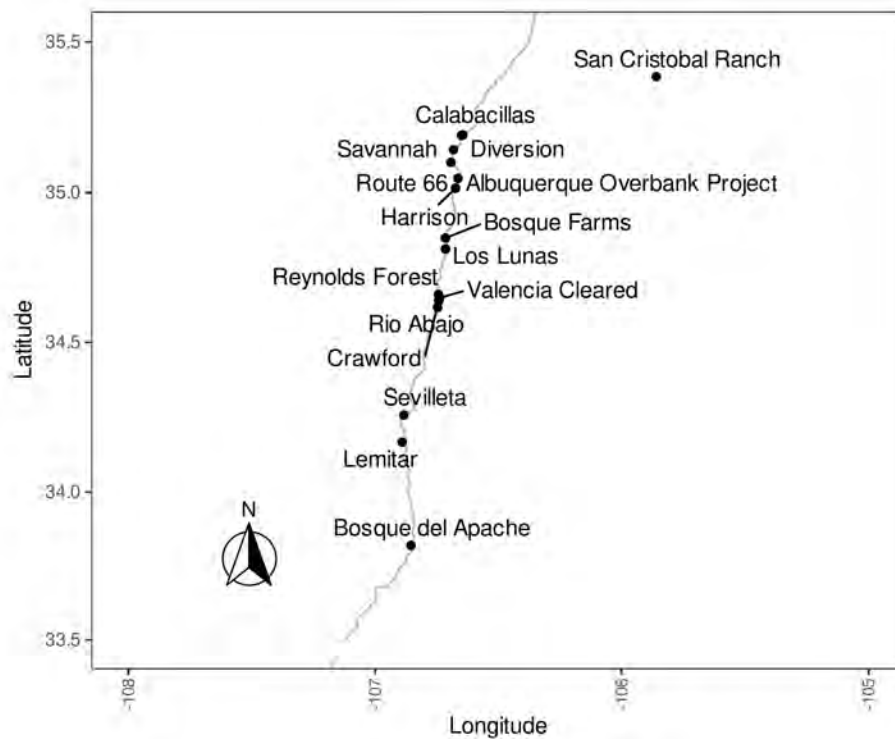


Figure 33. Map of sites collected for TLB May 2020 - September 2020, note that San Cristobal Ranch and Rio Abajo are not considered BEMP sites.

Community Composition Consequences

Currently, BEMP graduate student research is focusing on the implications of beetle populations and their subsequent effects on tamarisk and surrounding bosque vegetation. Despite overwhelming evidence of beetle damage and changes in tamarisk phenology, there has been no significant difference in community composition based on varying degrees of beetle abundance (absent, low, medium, and high abundance). Although currently there is no significant difference in vegetative community composition based on beetle abundance, continuous monitoring of the beetle population remains important as Tamarisk and *Diorhabda* have become established organisms within the riparian ecosystem. BEMP TLB data are available by request, and will be posted on GitHub (https://github.com/BEMPscience/bemp_data) along with our other long-term datasets.

12.0 Outreach for the 2019-2020 school year

Prior to necessary shifts required to accommodate for the COVID-19 pandemic, BEMP education provided 117 in-person, after-school, field monitoring and study trips for 2,802 students and 203 adults from August 1, 2019 to February 28, 2020.

To ensure public health and safety, BEMP pivoted away from in-person programming for K-12 schools in March 2020. From March 1, 2020 to May 31, 2020, BEMP education delivered 84 total programs to 10,473 students and 120 adults. Though some after-school and field monitoring opportunities were provided, educational programming relied heavily upon 72 of the 84 programs that were provided through printable and electronic platforms, including Grab and Go activities, Exploring the Outdoors and Bosque Data Jam. University seniors and graduate students participating in the Biology 408/508 course were restricted from conducting field and lab work during this time.

In total, BEMP education reached 13,275 students and 323 adults throughout 29 different schools during August 2019 to May 2020. Schools served include: ACE Leadership High School, Albuquerque Institute of Math and Science, Arroyo Del Oso Elementary School, Bandelier Elementary School, Belen High School, Native American Community Academy, Bernalillo Middle School, Bosque School, Cien Aguas International School, Comanche Elementary School, Cottonwood Valley Charter School, Coyote Willow Family School, Del Rio Academy, Garfield Middle School, Georgia O’Keeffe Elementary School, Highland High School, Horizon Academy West, Inez Elementary School, Jefferson Middle School, La Academia De Esperanza, Manzano Day School, nex+Gen Academy, North Star Elementary School, School of Dreams Academy, Sombra del Monte Elementary School, The International School at Mesa del Sol, Van Buren Middle School, West Mesa High School, and Wilson Middle School. Of these 29 total schools, 21 (or 72%) are considered to be classified Title One, wherein at least 40% of students qualify for free and/or reduced lunch.

In response to the COVID-19 pandemic, BEMP education pivoted to better support the diverse needs of students, teachers and families. Though COVID-19 has posed challenges for in-person learning, it has reinforced the value and need for continued student-centered, experiential, place-based educational opportunities.

Rising to this challenge, BEMP education re-envisioned in-person classroom sessions to two remote, multi-part, synchronous lessons that leverage learning and connection within a student’s own place-based residence. Exploring the Outdoors (Part I and II) and Bosque Data Jam (Parts I - IV) focus on phenological observation, ecosystem monitoring, climate change, scientific processes, graphing and data analysis. Both lessons encourage a deeper understanding of nature in students’ backyards and connectivity to the larger Bosque ecosystem while developing career-based skills in the sciences, public-speaking and presentation delivery. Further, students have been encouraged to track the

biodiversity of their neighborhoods using cell phone technology to participate in BioBlitz surveys. They have created and implemented their own arthropod pitfall traps to assess species abundance and diversity, collect and track precipitation, and monitor phenological changes of plants and animals in their own backyards or nearby Open Spaces. Additionally, remote, multi-part, asynchronous lessons entitled the River of Change and Stormwater Science have been offered via Edpuzzle, an interactive video lesson platform.

To better facilitate learning opportunities for students with limited computer access, BEMP staff printed and distributed educational materials for up to 12,900 students in Bernalillo County from March 26 to June 30, 2020 at Grab & Go meal locations, Little Libraries, Children’s Choice Child Care, NM Out-of-School Time Network’s Storytime in the Park, and more. These new one-page activities, compiled into an NGSS-aligned, multi-page booklet, engage students in real data analysis, such as through Seed Adaptation and Backyard Precipitation Station activities. They have also been made available on our website to ensure broad accessibility. Further, all education activities and materials provided are bilingual in Spanish and English, strengthening accessibility initiatives for broader audiences.

Additionally, accommodating for COVID-19 precautionary measures, 2020’s annual Crawford Symposium shifted to an online format, broadcasting presentations of 60 participants’ data analysis and findings outwards in a reach of 235 views.

Throughout the March 26 to June 30, 2020 time period, BEMP educational materials were viewed at least 232 times from [BEMP’s website](#) and are similarly available on the BEMP Education github page. BEMP’s social media presence has increased, growing to 26,354 contacts (March - June 2020) across Instagram, Facebook, and YouTube’s online platforms.

Table 3. Social Media outreach by BEMP in 2020

Social media platform	Reaches	Engagements	Views
Instagram	7766	1468	NA
Facebook	14809	1853	NA
YouTube	NA	NA	458

Note: BEMP used Creator Studio to track Facebook and Instagram engagement through a variety of different metrics. Reaches refers to how many people saw either a specific post or any content from the social media pages. Engagements refers to the total number of likes, shares, clicks, and people clicking “see more” for longer posts.

13.0 Student research projects for the Virtual Symposiums

Crawford Symposium

The [Crawford Symposium](#) is an annual event where we celebrate our year's successes in memory of Cliff Crawford, BEMP's co-founder. Throughout his life, Dr. Crawford inspired students of all ages and catalyzed a growing body of research in the bosque. Moreover, he also radiated the work of students, fellow scientists, and professionals back into the community. Thus, each year we gather to celebrate community science and environmental research along the Middle Rio Grande in his honor. This allows us to showcase the research of the students and professionals who have been engaged with our organization. Last year, due to the pandemic, this event changed its format and was streamed live on our [YouTube channel](#). This year, we plan to follow the same format.

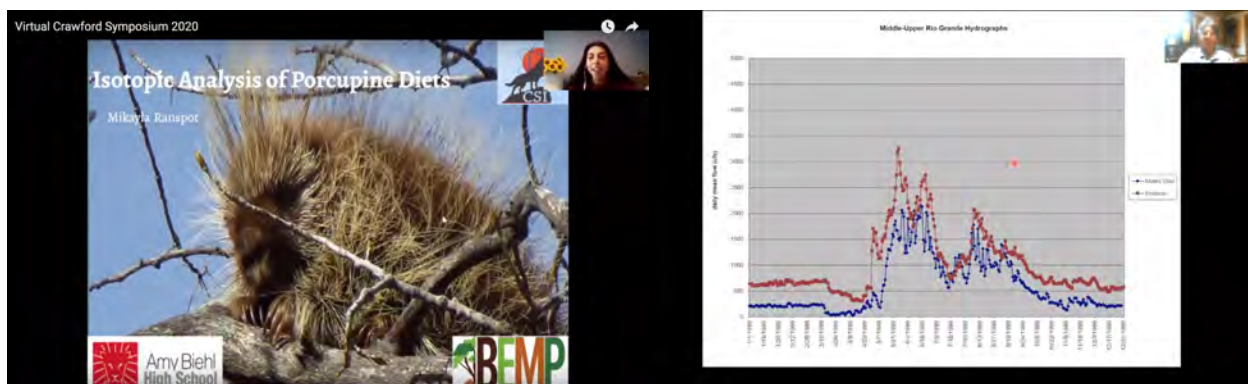


Figure 34. Student from Amy Biehl, Mikayla Ranspot, and professional with Audubon New Mexico, Paul Tashjian, presenting at the 2020 Virtual Crawford Symposium.

Spanish language Luquillo-Sevilleta Virtual Symposium (LSVS)

In partnership with the Luquillo Long Term Ecological Research Network, BEMP annually hosts a formal student webinar for students to share their own, original research delivered entirely in Spanish. Students of all ages from Albuquerque and Puerto Rico gather (virtually) to share their long term scientific research of their respective forests and rivers. Students from Puerto Rico work with the Luquillo Long Term Ecological Research Schoolyard program to study and present important issues related to the hydrology and pedology of the area and its changes over time. New Mexico BEMP students, in collaboration with the Sevilleta Long Term Ecological Research Schoolyard program, present projects related to water quality, shifts in vegetation cover and other BEMP-related datasets. Ultimately, this event intends to celebrate the diversity in cultures and backgrounds that these two locations foster.

Last year, students from New Mexico and Puerto Rico shared their research on how human disturbances have affected their local ecosystems. This year, BEMP educators have been meeting virtually with the different schools (College and Career High School, La Academia de Esperanza, Bosque School and The International School) that will be attending the event to help them prepare and translate their projects. We have also invited a new New Mexico organization, the [Asombro Institute](#), to collaborate in this project starting this year. We hope to continue to expand our partnership to other spanish speaking organizations in the near future.

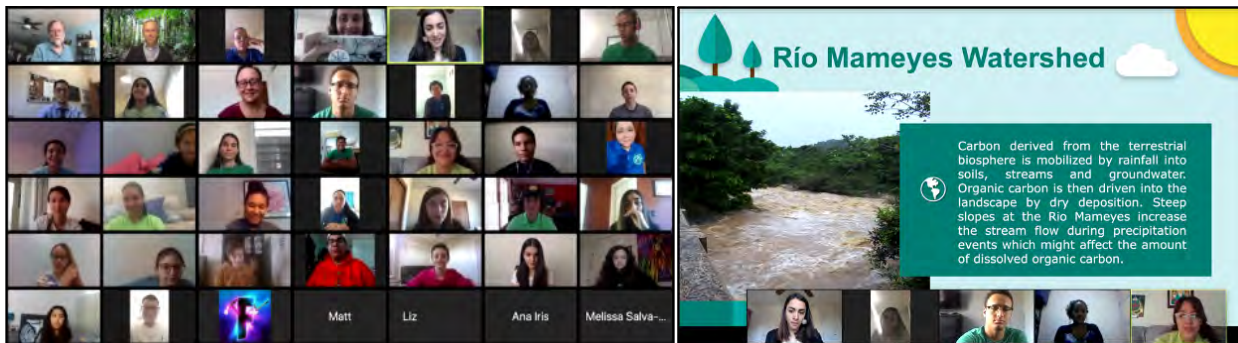


Figure 35. Students, teachers and educators that participated in the 2020 Luquillo-Sevilleta Virtual Symposium.

14.0 Ongoing commitment to justice, equity, diversity, and inclusion

BEMP science and education take place on current and ancestral lands of the Pueblo, Diné (Navajo), Apache, and other displaced Indigenous peoples for whom this land is home. BEMP acknowledges that this land was forcibly stolen by European colonizers and that the detrimental effects of their presence through violence, displacement, and disease are still impactful today. We offer this acknowledgement as a first step in honoring the Indigenous peoples and their ancestors and as a call toward further learning and actions as guests in this place.

BEMP is committed to increasing our knowledge regarding Justice, Equity, Diversity, and Inclusion (JEDI) by having group discussions, reading, attending seminars and webinars, and conducting professional developments led by external professionals. Examples of BEMP's accomplishments and implementations can be seen as follows:

Organizational:

As seen above, a formal land acknowledgement has been created for field use, presentations, and the website with the assistance of Indigenous partners. To ensure equity and access when hiring new employees, staff have attended seminars on equitable hiring practices and shared resources from those seminars. This includes changing the requirements for a job to include equivalent experience to a formal degree, including various staff members and various levels in the hiring process, and expanding our reach when posting job applications. Organizational assessments have been conducted by the staff to determine areas of improvement in regards to JEDI. BEMP cultural and meeting norms have been created by the staff, which everyone must agree to when conducting BEMP work and meetings.

Educational:

Title One schools have been prioritized for BEMP education in Albuquerque and the surrounding areas. Of the 29 total schools BEMP partnered with, 21 (or 72%) are considered to be classified Title One, wherein at least 40% of students qualify for free and/or reduced lunch. Since the beginning of the COVID-19 pandemic, BEMP increased their social media presence in order to stay connected with supporters, teachers, students, and other community members. All social media posts are translated into Spanish. At-home, place-based activities created for classrooms, families, and individuals have been posted to our website, Facebook, and Instagram, and are also available in English and Spanish. Prior to and during the COVID-19 pandemic, students from various schools in Albuquerque participated in the Luquillo-Sevilleta Virtual Symposium, allowing students to discuss the science they are working on in Spanish and to students in Puerto Rico.

Partner Organizations:

We have formed discussion and reading groups with partner organizations in order to broaden our learning and understanding of various life experiences. In order to develop meaningful JEDI content for BEMP staff, members of BEMP consulted with Bosque School's Director of Diversity, Dr. Kim Eichorst, BEMP Science and Research Director, partnered with the Sevilleta LTER to improve structural and organizational processes. Webinars and training have been available to staff through the NCEAS Seminar Series, Environmental Education of New Mexico, and numerous other organizations when time allows.

Field Operations:

BEMP staff partnered with the Albuquerque Sign Language Academy Honeybadger Crew in constructing accessible bosque trails behind Bosque School, which allowed more students to collect data with BEMP staff, as well as allowing the public to have an accessible area of the bosque. Safety regulations were implemented in the field, which allowed for staff to speak up about not feeling safe or comfortable in a situation. When taking students out into the field, BEMP staff prioritize student safety, encouraging communication to staff if there is any reason they feel unsafe or uncomfortable and adjusting plans accordingly.

15.0 Water quality on the Middle Rio Grande - Impacts on the watershed

The Mid Rio Grande Stormwater Quality Team funds the Bosque Ecosystem Monitoring Program (BEMP) to engage students and other community scientists in monitoring the Rio Grande for *Escherichia coli* and field parameters. This bacterial pathogen is a public health issue, often a proxy for other aqueous pathogens, an indicator of water quality, and disproportionately impacts underserved and economically disadvantaged communities. Sampling methodologies, full list of sampling sites, and further details are in the 2020 Annual Stormwater Quality Team Technical Report available on request.

Spatial distribution of the 2020 *E. coli* coliform grab samples and historical context.

During the July 29th, 2020 grab sampling all sites were in exceedance (Figure 36); however, there were several nights of rain before the sampling event.

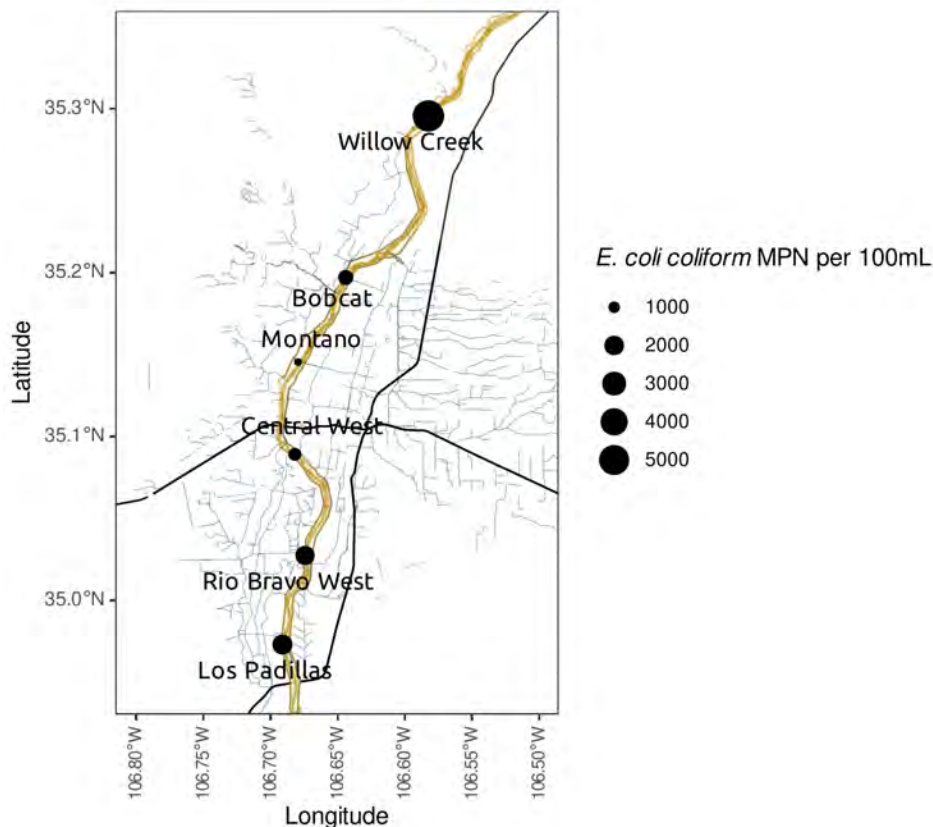


Figure 36. Spatial plot of grab samples of *E. coli* coliform on July 29, 2020. The EPA limit for *E. coli* is 410 MPN/100ml. The black lines are I-40 and I-25. The grey lines show drains, ditches, and arroyos.

July sampling needs to be put into an annual and longer term context. The EPA limit for *E. coli* is 410 MPN/100ml. Over the course of the year both a longitudinal and transactional study was carried out. Figure 37 shows that for most of the year the samples were under the EPA limit.

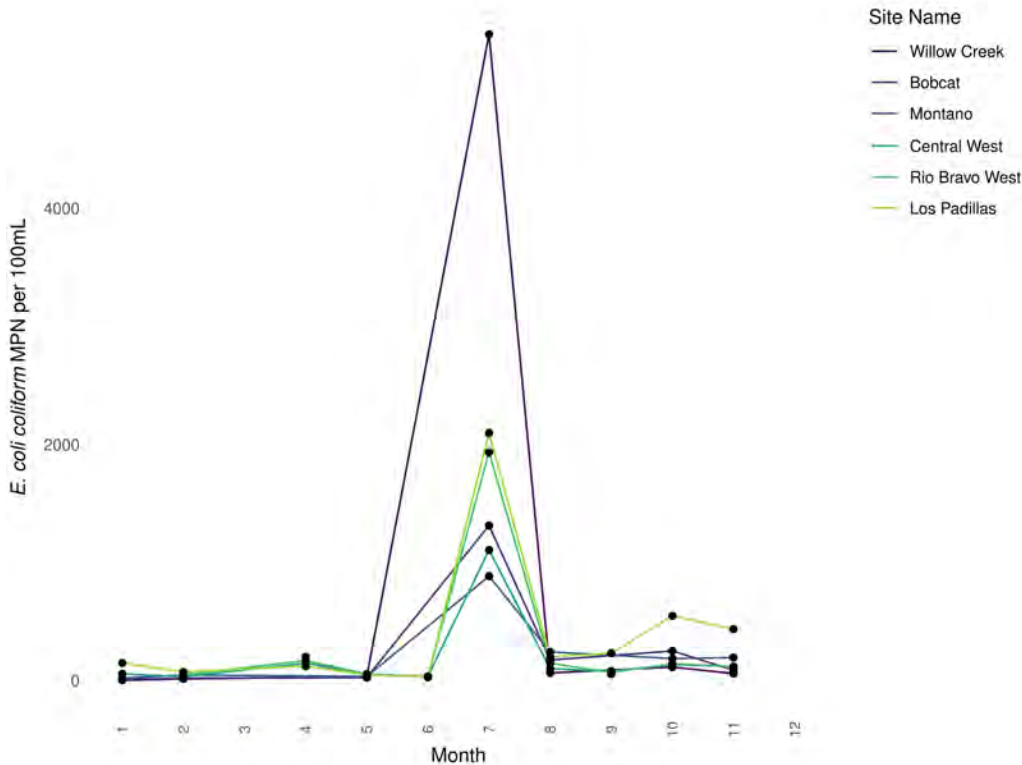


Figure 37. *E. coli* coliform from the longitudinal sampling sites. The levels are highest in the summer months. The Willow Creek, Bobcat, and Montano sites were not sampled in March, June, September and December due to different sampling methodology during those months.

The variation between sites and response to precipitation events point to a complex set of interactions in the Rio Grande. The historic BEMP *E. coli* data goes back to 2005. Long term community science data allows us to have a clearer picture of *E. coli* contamination in the Rio Grande. While the values collected during the July sampling appear high, in the historic context (Figure 38) they are four to five times lower than previously recorded samples.

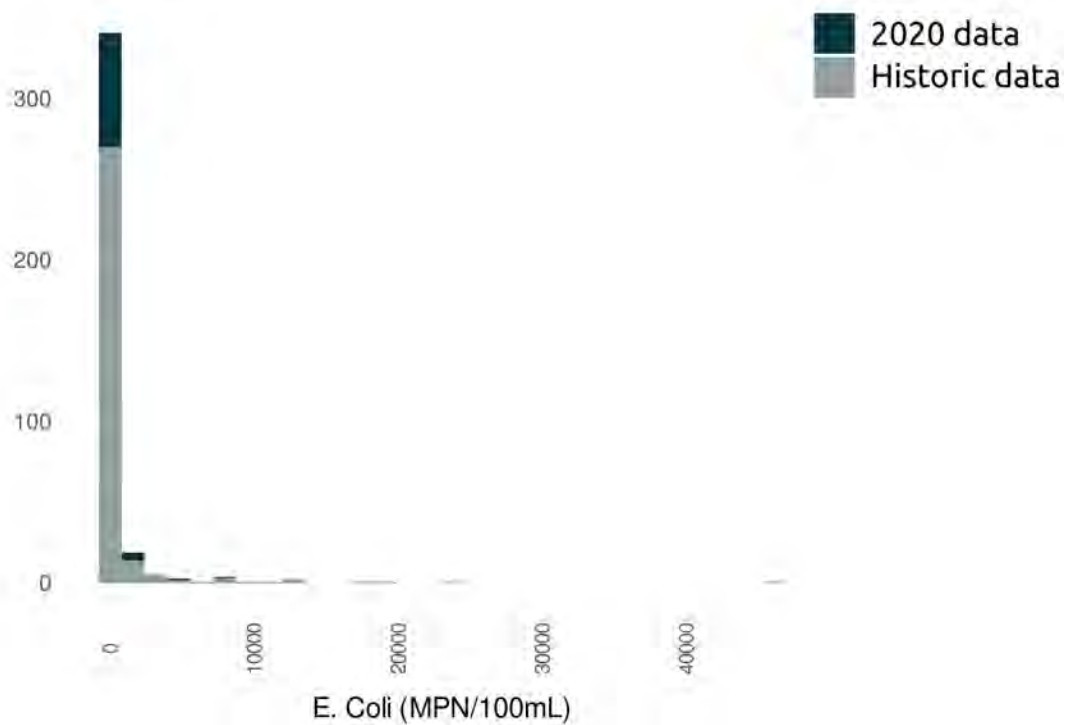


Figure 38. Histogram of the 2020 and historic *E. coli* coliform data. The 2020 values appeared high, however the longer term, historic data shows that values can be up to four to five times greater.

16.0 Rio Grande wetlands as potential bioremediators

This project was funded by the Valencia Soil and Water Conservation District to examine the mitigating influence of natural wetlands on wastewater effluent. This study intended to assess the quality of the river flows used for irrigation of agricultural lands. Water quality was examined through measuring Pharmaceuticals and Personal care products (PPCP's), *E. coli*, and anions in and around the Albuquerque Southside Wastewater Treatment Plant and Los Lunas Wastewater Treatment Plant effluent. Samples were taken in the Rio Grande up and downstream from the facilities as well as within their effluent conveyance channels.

The Los Lunas Wastewater Treatment Plant effluent flows slowly through a 300 m shallow wetland prior to discharging into the Rio Grande. In contrast, Albuquerque's effluent flows through a 60 m straight, deeper channel with little vegetation prior to its confluence with the river. Water from these two different outflow designs enabled a glimpse into the much studied ability of wetlands to affect concentrations of a diverse array of compounds.

Sampling methodologies, full list of sampling sites, and further details are in the 2020 BEMP Wastewater Outflow Study Technical Report available upon request.

All data is housed on https://github.com/BEMPscience/bemp_data and is available to the Valencia Soil and Water Conservation District and the public.

Table 4. List of Pharmaceuticals and Personal Care Products (PPCP's) detected in samples and their common names.

Compound	Description	Compound	Description
1,7-Dimethylxanthine	metabolite of caffeine	Iohexal	x ray contrast agent
2,4-D	herbicide	Ketorolac	nonsteroidal anti-inflammatory drug (analgesic)
4-nonylphenol (semi quantitative)	antioxidants, lubricating oil additives, laundry and dish detergents, emulsifiers, and solubilizers manufacturing	Lidocaine	local anesthetic
4-tert-Octylphenol	commercial chemical found in plasticizers, fuel oils, dyes, adhesives, disinfectants	Lopressor	blood pressure medication
Acesulfame-K	artificial sweetener	Metolachlor	herbicide effective towards grasses

Albuterol	bronchodilator	Meprobamate	anxiety medication
Amoxicillin (semi-quantitative)	antibiotic	Naproxen	nonsteroidal anti-inflammatory drug (e.g., Aleve)
Atenolol	blood pressure medication	Pentoxifylline	medication for improved blood flow and pain reduction (e.g., Trental)
Atrazine	herbicide	Primidone	seizure medication
Butalbital	barbiturate	Salicylic Acid	anti-inflammatory (e.g., aspirin)
Caffeine	psychoactive drug	Sucralose	artificial sweetener (e.g., splenda)
Carbamazepine	seizure medication	Sulfadiazine	Sulfa antibiotic
Carisoprodol	muscle relaxant	Sulfamethoxazole	antibacterial medication
Cimetidine (semi quantitative)	ulcer medication	TCEP	reducing agent
Cotinine	metabolite of nicotine	TCPP	flame retardant compound found in polyurethane
DEET	pesticide	TDCPP	compound found in flame retardants, pesticides, plasticizers, and nerve gases
Diclofenac	nonsteroidal anti-inflammatory drug (e.g., Voltaren)	Theobromine	chemical found in foods
Dilantin	seizure medication	Theophylline (semi-quantitative)	bronchodilator
Diltiazem	blood pressure medication	Thiabendazole	parasitic drug
Diuron	herbicide	Triclosan	antibacterial and antifungal agent
Estrone	hormone	Triclocarban	antibacterial chemical, FDA banned in in 2016 in soaps and washes
Fluoxetine	medication for depression, OCD, bulimia, alcoholism (e.g., Prozac)	Trimethoprim	antibiotic (e.g., Primisol)
Gemfibrozil	cholesterol medicine (e.g., Lipid)	Warfarin	blood thinner medication (e.g., Coumadin)

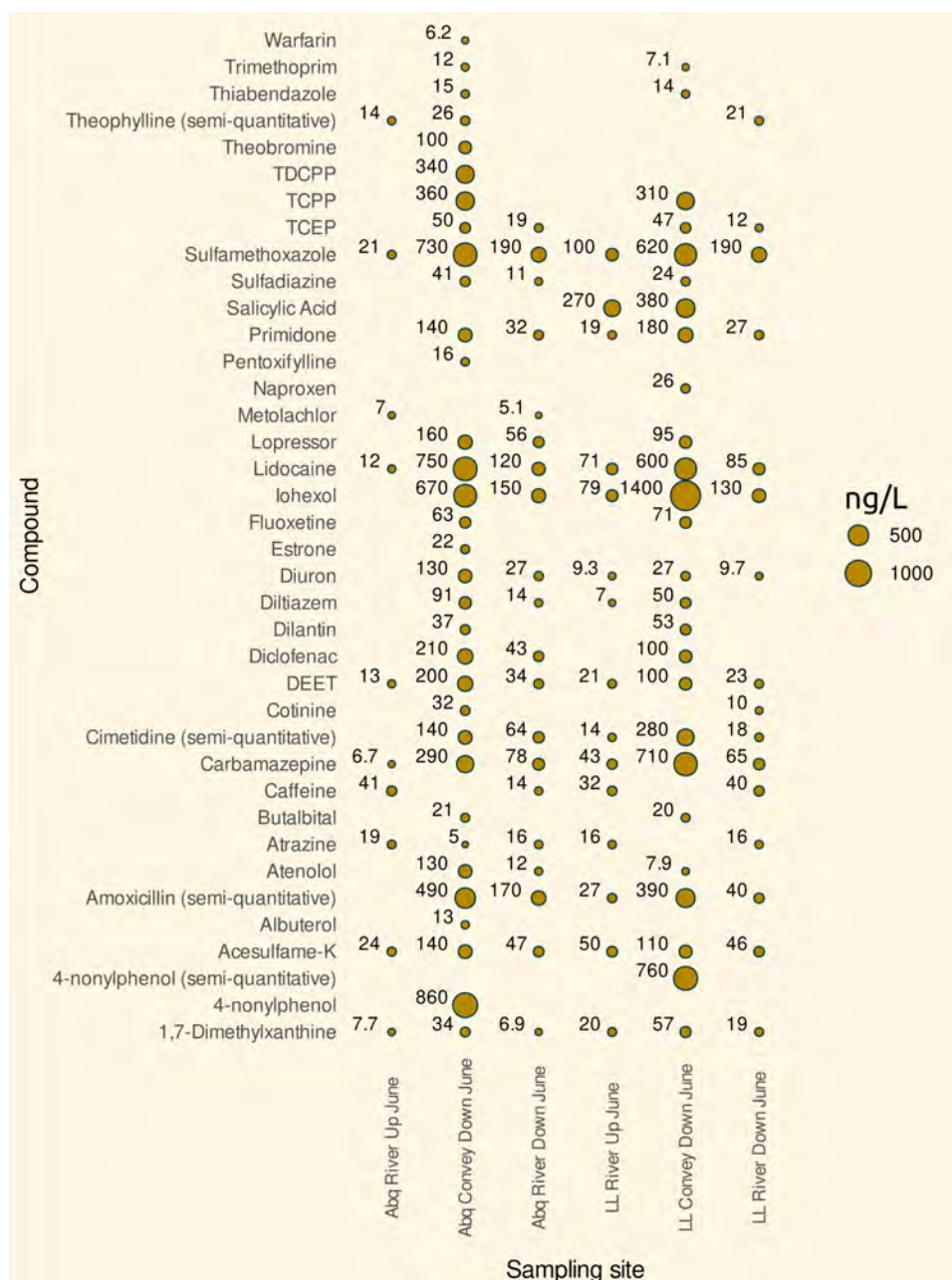


Figure 39. Concentrations of Pharmaceuticals and Personal Care Products (PPCP'S) collected from the June sampling event from the Albuquerque conveyance to the Los Lunas downstream river sample. There is a 29 km distance between the lower Albuquerque and the upper Los Lunas sample point.

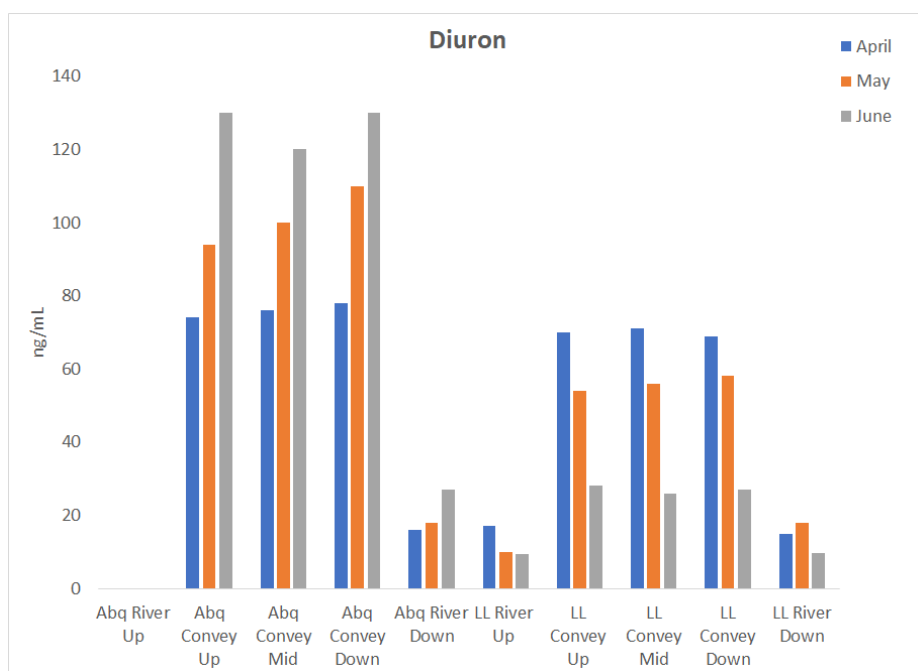


Figure 40. The chemical compound, Diuron, was detected at all sampling locations besides upstream from the Albuquerque conveyance channel.

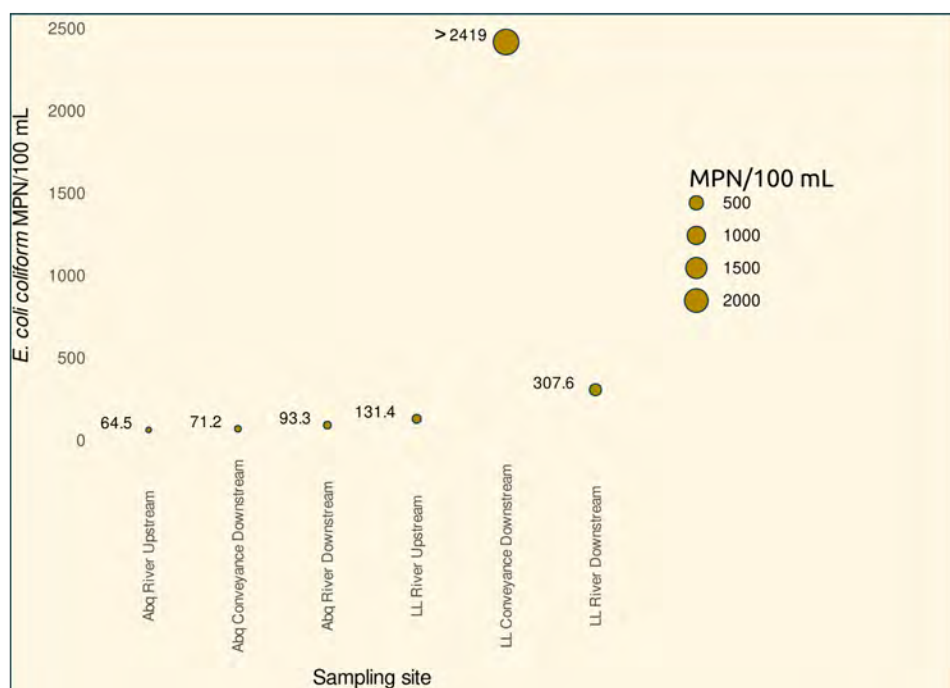


Figure 41. Levels of *E.coli* coliform bacteria from six of the ten sampling locations taken in June, 2020.

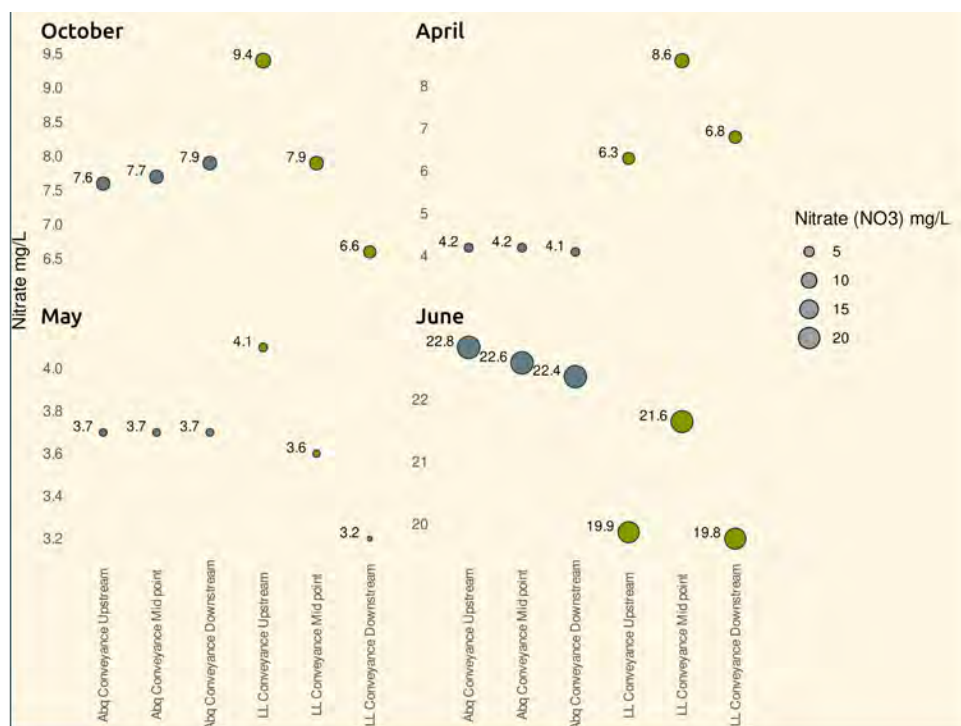


Figure 42. Nitrate concentrations through the Albuquerque (grey circles) and Los Lunas (green circles) conveyance channels.

There were 50 different PPCP compounds detected throughout the duration of the study. 21 of these compounds were not found above the Albuquerque treatment plant but were present in all of the samples within the conveyance channels and downstream river samples. Seven chemicals decreased through the Los Lunas wetland conveyance channel each sampling event: caffeine, carisoprodol, cimetidine, diclofenac, diltiazem, fluoxetine, and sulfadiazine. Five compounds decreased throughout the Albuquerque conveyance channel each month: estrone (not found in Los Lunas), TDCPP (only found in Los Lunas in May), TCP, erythromycin (not found in Los Lunas), and triclocarban. Anion levels did not notably change throughout the Albuquerque conveyance channel but a decline in nitrate concentrations was observed in the Los Lunas wetland conveyance for two of the four collection events. Anion levels were detected at lower concentrations in the river than in both effluent channels.

A few PPCP compounds worthy of highlighting are Diuron (Figure 40), Amoxicillin and Diclofenac. Diuron is an herbicide used to control types of broadleaf weeds, grasses and woody plants and is considered “very toxic to aquatic life” (<https://pubchem.ncbi.nlm.nih.gov/>). The orally prescribed antibiotic Amoxicillin, which has been the cause of drug-induced liver injury, was highest in concentration within the conveyance channels, especially in April. Diclofenac is an anti-inflammatory

compound with potential for serious negative effects in some people and is one of the most frequently discovered pharmaceuticals in water monitoring (<https://pubchem.ncbi.nlm.nih.gov/>). Concentrations of Diuron and Amoxicillin were below EPA tolerance or toxicity levels. All three compounds were detected in all months in all samples within and below the Albuquerque treatment plant effluent conveyance confluence with the river. Most of the detected PPCP's are not regulated by the EPA or NMED.

The majority of *E. coli* samples were below NMED and EPA regulations for primary contact streams. There were consistently high levels found within the mid and furthest downstream sampling locations within Los Lunas conveyance channel. The high load could be attributed to an increase in avian abundance due the quality of wetland habitat. *E. coli* levels were immediately reduced to regulatory levels when mixed with the Rio Grande water. Further research is needed to understand the high levels within the confluence.

17.0 Conclusions

Implications for Management

Native vegetation community establishment and success are most strongly tied to access to water, particularly groundwater. High variability in precipitation does not have as strong an impact on native vegetation as does variation in depth to groundwater. Exotic vegetation communities, while still dependent on groundwater and/or precipitation to become established, seem to increase in response to changes in canopy cover. As areas are cleared of exotic trees, exotic understory plants readily increase unless there is enough access to groundwater to support increasing native understory species. This indicates that even successful restoration projects will need maintenance in controlling exotics years after projects have been completed. As canopy declines, assessing changes in fuel load will become more important, especially for older forest areas. Site health is still best assessed through changes in groundwater levels (both mean and variance), native and exotic vegetation, and arthropods like ground beetles. Another important assessment of changes in site health is monitoring the tamarisk leaf beetle (TLB) and its impacts on potential habitat for Southwestern Willow Flycatcher and other animal species. Damage from TLB on saltcedar may keep saltcedar from expanding as rapidly as Russian olive, Siberian elm, or other exotics; however, high TLB abundance has not yet resulted in rapid decline and mortality at most sites. Monitoring defoliation and dead branches may be more accurate in capturing TLB abundance than a snapshot of TLB monitoring that is done once per month, as high levels of defoliation do not always correspond to high abundance. Population shifts can occur rapidly, but saltcedar takes longer to recover from damage done.

Implications for Education

BEMP continued to provide outdoor science education to students across the state, even though student monitoring of field sites was largely restricted and classroom visits were cancelled. Adaptations to COVID restrictions led to the utilization of other platforms, including online and hard copy science activities as well as social media engagement strategies, which greatly broadened BEMP's outreach. In many ways, COVID-19 has exposed and widened the gap amongst educational audiences, disproportionately impacting students and schools that had already been struggling pre-pandemic. BEMP's commitment to equitable and inclusive hands-on research has become even more paramount over this last year. For this reason, as we move back into bringing students to the field to participate in experiential learning, we will continue to adapt to the needs of our community by maintaining our provision of online and hard copy resources as well as creatively constructing new avenues to promote more equitable access.

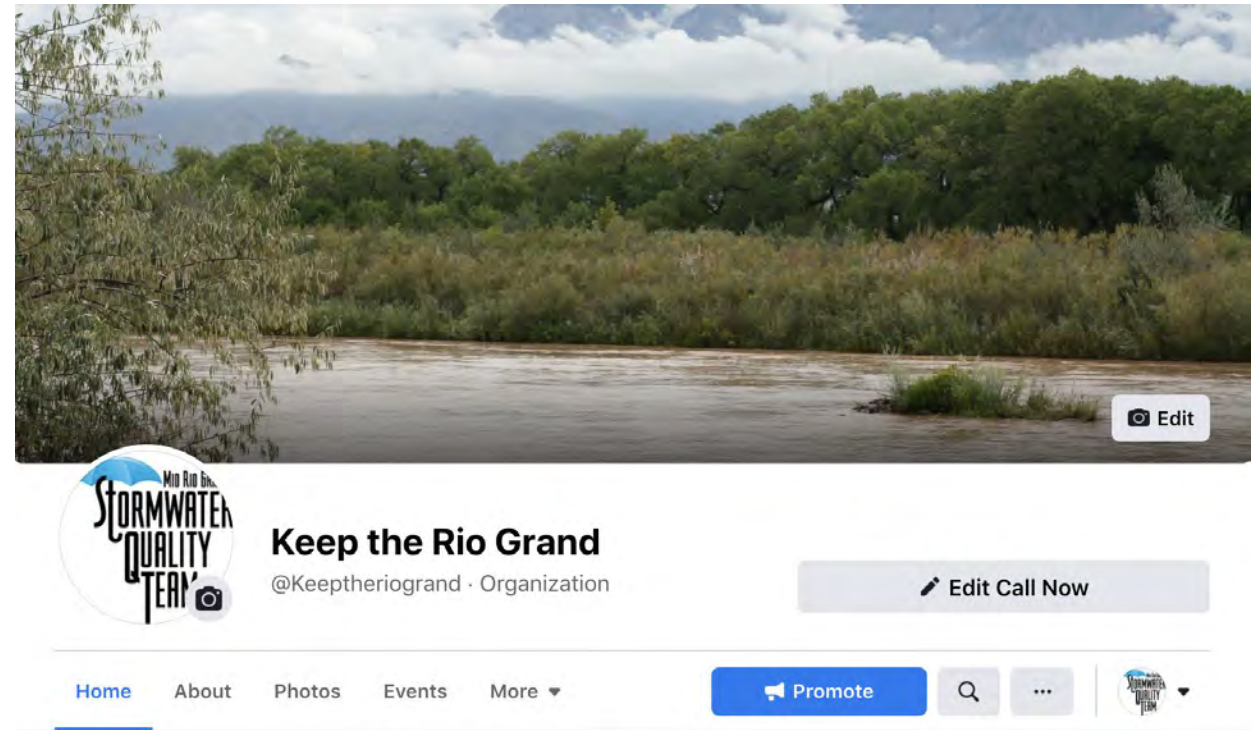


KEEP THE RIO GRAND SOCIAL MEDIA AUDIT

MARCH 2021

CURRENT STATE OF SOCIAL

- **Facebook Followers**
 - 177 page likes
- **2020 Engagement Rate**
 - 3.6% (55% below industry average)



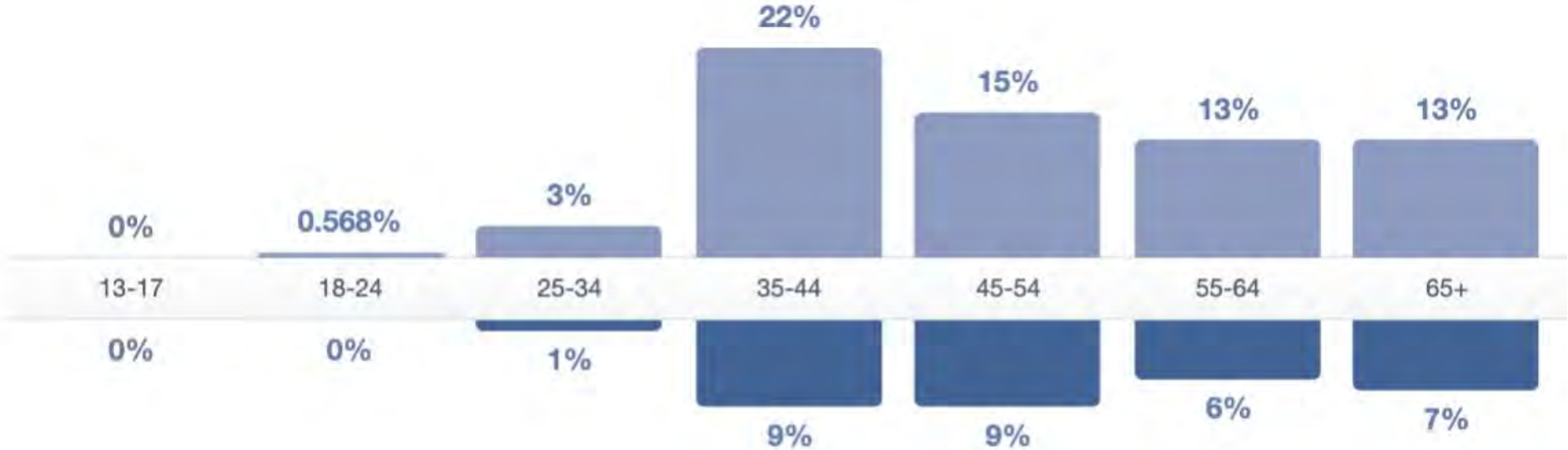
CURRENT AUDIENCE PROFILE

Women

■ 66%
Your Fans

Men

■ 33%
Your Fans

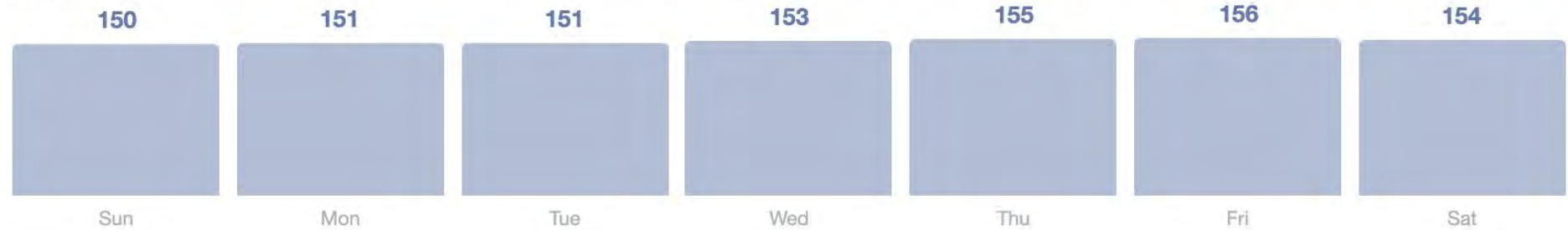


GEOGRAPHIC AUDIENCE PROFILE

Country	Your Fans	City	Your Fans	Language	Your Fans
United States of America	174	Albuquerque, NM	109	English (US)	173
Myanmar	1	Rio Rancho, NM	9	English (UK)	3
Bulgaria	1	Santa Fe, NM	3		
		Las Cruces, NM	2		
		El Paso, TX	2		
		Corrales, NM	2		
		Raton, NM	2		
		Las Vegas, NM	2		
		Lafayette, CO	1		
		Los Ranchos de Albuq...	1		

AUDIENCE ACTIVITY

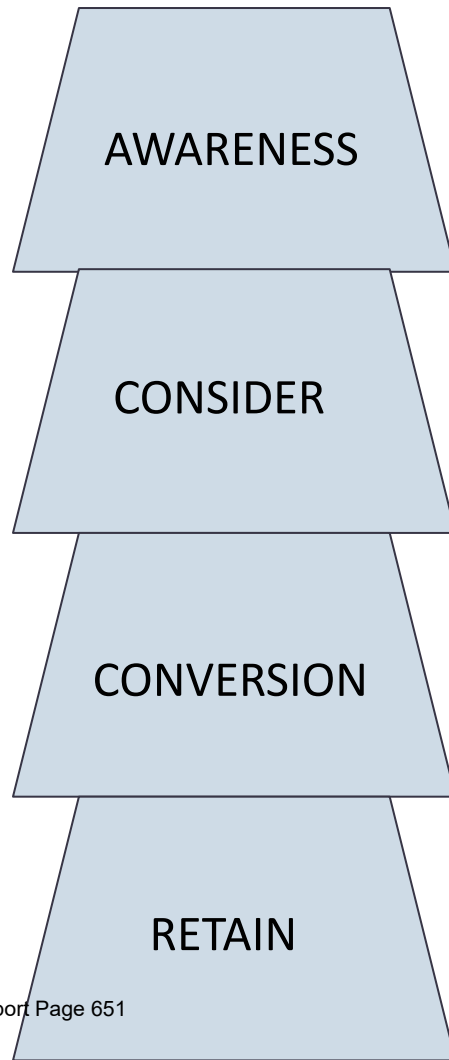
DAYS



TIMES



SOCIAL GOALS AND KPIs



- Expand general awareness of Keep the Rio Grande initiative
- Establish a clear value proposition
- Communicating mission/initiative
- Drive click-throughs to website and generate more awareness on social media
- Educate current followers on safe practices and events
- Communicating benefits and results of Keep the Rio Grande

TARGET PROFILE - SOCIAL MEDIA

- **General Public**

- Pet owners
- Mechanics/Car Enthusiasts
- Hikers/Walkers
- Home repair do it yourselfers

- **Strategic Partners/Organizations**

- Pet stores
- Outdoor recreation organizations
- Governmental organizations

Content Framework

- Tips
- Mythbusters
- General awareness

Content Framework

- Shareable content

CONTENT STRATEGY - FACEBOOK

OWN

- Share high quality images of activities
- Drive people to learn more about the mission
- Produce infographics about facts, stats, and more about Stormwater and the Keep the Rio Grand initiative
- Any community cleanup, related events
- Owned blogs or earned media
- Resources

SHARE

- National articles about pollutants and how to combat them
- Facebook pages of community members doing their part
- Relevant community, non Stormwater hosted events that would be of interest to the community

CONTENT IDEAS

- Branded graphics - tips, facts, mythbusters, announcements, events, and community resources
- Behind the scenes content (community clean ups, “how to” content, etc.)
- Importance of mission
- Facts about how storm water pollutes the Rio Grande, effects on wildlife, the public health risk from storm water, education tools for the community
- Information on how to get involved in preventing pollution
- “Do this instead of that” (helpful ways to dispose of hazardous materials)
- Reach out to or partner with local organizations with similar missions to share content (Illegal Dumping Partnership Bernalillo County, Ditch and Water Safety Task Force, Bosque School’s BEMP program, or other stormwater quality teams)

SAMPLE CONTENT

**KEEP THE RIO
GRANDE TIP: DON'T
FORGET TO CLEAN UP
AFTER YOUR FURRY
FRIENDS**



Part of keeping the Rio Grande clean is picking up after our four legged companions. When it rains, their waste can contaminate the river. Learn more at: <https://keeptheriogrand.org/> #keeptheriogrande #scoopthepoop #newmexico

SUNNY505



Arroyo Classroom

2020-2021 final report

submitted by
Erin Blaz, CSWCD
June 2021

SUMMARY

The Arroyo Classroom program utilizes our natural arroyos as outdoor classrooms and brings local animals into the classroom to motivate 3rd graders to respect the arroyos as important wildlife habitat. Orilla Consulting, LLC developed the program in 2012 and initially implemented the program for 7 classes at Maggie Cordova Elementary in Rio Rancho. In 2013, the program grew to serve 20 classes. On July 1st, 2015, Orilla Consulting, LLC transferred the program to Ciudad Soil and Water Conservation District as part of the larger education and outreach efforts we are involved in throughout Bernalillo and Sandoval Counties. In the 2020 2021 school year, we served 35 classes within Rio Rancho Public Schools, reaching approximately 38 teachers and 670 students with 2,680 hours of program time.

Participating Schools

SCHOOL	Number of classes	Number of Students
Enchanted Hills Elem.	7	132
Martin Luther King Elem.*	6	132
Sandia Vista Elem.	6	107
Maggie Cordova Elem.*	5	92
Cielo Azul Elem.*	4	99
Puesta del Sol Elem.*	7	108
TOTALS	35	670

* Title 1 school

Sponsor

- Southern Sandoval County Arroyo and Flood Control Authority (SSCAFCA)

Sponsor provided a total of \$21,224.28 in cash.

Deliverables:

All presentations were offered virtually and completed.

- Watershed Presentations: 35:35
- Arroyo Walk: 35:35
- Bat and Bird Presentations: 35:35 (some classes doubled up due to a scheduling issue, all classes completed)
- Snake Presentations: 35:35

Program Description

Essential Questions: What is a watershed and how does water move across it? What important functions do arroyos provide for humans and other creatures? In what ways can we enjoy arroyos safely and learn new things?

- Students characterize arroyos as ecosystems as well as drains
- Students identify arroyo features that support wildlife
- Students describe the plants, animals, birds and insects that depend on the arroyo ecosystem
- Students explain the ways in which arroyos receive water and the dangers of arroyos
- Students recite the rules for arroyo safety

The program consists of a four-part series of lessons, based on grade-level science standards and addressing areas of interest to SSCAFCA, such as bats, burrowing owls, ATV use, pet waste, and arroyo safety. Erin Blaz and Endion Schichtel, an educational contractor for Ciudad SWCD, delivered two of the lessons – an introductory lesson about watersheds, and a virtual arroyo walk that centered on native plants. Talking Talons Youth Leadership provided the virtual animal presentations as they were prepared to and experienced in delivering virtual presentations and relevant content to Arroyo Classroom, a much needed skill set for delivering the program during the global pandemic. All lessons were adapted for the virtual setting.

This year the virtual watershed lesson expounded on the water cycle and aimed for students to recognize how water moves across hard (impermeable) or soft (permeable) surfaces. Students made predictions about how water sprayed on a sponge and a stone tile (both at an angle) would move differently. Students also observed their immediate outdoor environment and compared how much permeable and impermeable surfaces they observed using a graph or pie chart. In summary, this lesson introduced the concept of a watershed to students, demonstrated how surface water becomes polluted

through various human impacts, and discussed the importance of keeping our arroyos clean.

The virtual arroyo walk this year began with a google earth tour of an arroyo to observe its pathway through Rio Rancho, any visible human impacts and demonstrate the draining power of arroyos into the Rio Grande. We also observed tire tracks in the arroyos and talked about not using motorized vehicles in arroyos, as they are not permitted or allowed in the arroyos, and discussed the impacts of illegal use of arroyos. We observed where the mouth of the arroyo meets the Rio Grande and observed that there was not any kind of infrastructure to clean the water as it enters the river on this particular arroyo. In the second part of the presentation we discussed desert plant adaptations and the desert climate. The lesson explored specific native plants in the arroyo habitat and how they cope with little surface water availability and precipitation, extreme temperatures (especially heat) and a windy, arid climate. This lesson also reviewed photosynthesis and plant anatomy to discuss how cactus are able to store and retain water. All classrooms received a link to SSCAFCA's [Arroyo Safety video](#) as a follow-up to the final presentation.

Please see Appendix A for Talking Talons report on the animal presentations.

Evaluation

Teacher feedback for 2020-2021 was collected from 14 participating teachers. Teachers overwhelmingly say they choose to participate in Arroyo Classroom to teach about local ecology and conservation issues, incorporate more science in the classroom, to offer experiential learning opportunities and to offer learning opportunities within the community to their students. They find the presentations to be uniquely engaging and meaningful for their students. Teachers find that Arroyo Classroom is complementary to other 3rd grade units of study such as life cycles and animal and plant adaptations. As it often noted in years past, the animal presentations are a highlight for the students, even in the virtual setting. With teachers undergoing so many unprecedented challenges in 2020-2021, it was extremely encouraging to see how valued Arroyo Classroom was this year.

Highlights from teacher feedback:

“The greatest learning outcome for my class was information about arroyo safety as well as information about how to keep animals and ecosystems in New Mexico safe...The virtual students are not receiving as much science this year and so providing these arroyo presentations was a great way to achieve those science standards!” - Ms. Parker, Enchanted Hills

“Students have been more engaged with the arroyo's around them. They are asking about the animals and are researching more information based on the presentations that were given.” - Ms. Reed, Puesta del Sol

“For my students the arroyo classroom presentation felt like a field trip. This program helped my students by trying to make this a normal school year with all of the changes we've gone through. They all really enjoyed the presentations.” -Abigail Carey, Enchanted Hills

“[The learning outcomes were] more awareness of the local environment we live in and appreciation for the plants, river, and wildlife we have.” - Ms. Kotila, Cielo Azul

“Great job with the virtual restrictions we have this year! Students loved the live animals!” - Ms. Carrillo, MLK

“Considering my class is 100% virtual, the presentations were engaging and provided a lot of information for the students. It provides a platform to extend into other science topics as needed.” - Ms. Begay, Cielo Azul

Survey Summary

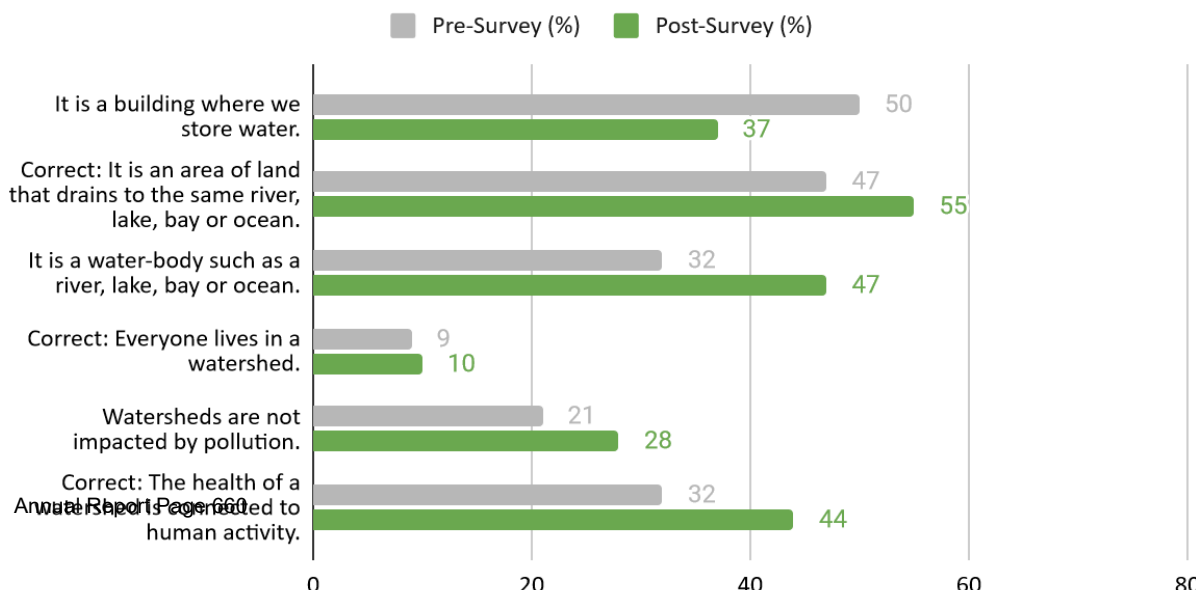
This is the third year that we’ve administered the pre and post surveys for Arroyo Classroom. Due to some changes in the program content for this year's virtual program, such as the availability of certain species and specimens to Talking Talons for their virtual presentations, we made some adjustments to the pre and post survey to reflect the content of the program. The survey questions were slightly more generalized and used a “check all the apply” format to address different learning objectives.

This year we had 360 pre-survey responses and 387 post-survey responses. In light of increased stresses on teachers this year, we did not follow up with repeated reminders to teachers to have their students complete the surveys. We felt it was best to offer one or two nudges but leave it at that. With such an unprecedented year for all of us, we felt it was beneficial to leave things on a good note and let teachers have one less thing to worry about. However, even with a sample size around 53-57% percent, we were still able to retrieve a decent amount of information about the program this year.

Survey Metrics:

Item 1 Watersheds

Select all that is true about a Watershed (also known as a catchment or drainage basin): (AC 20-21)

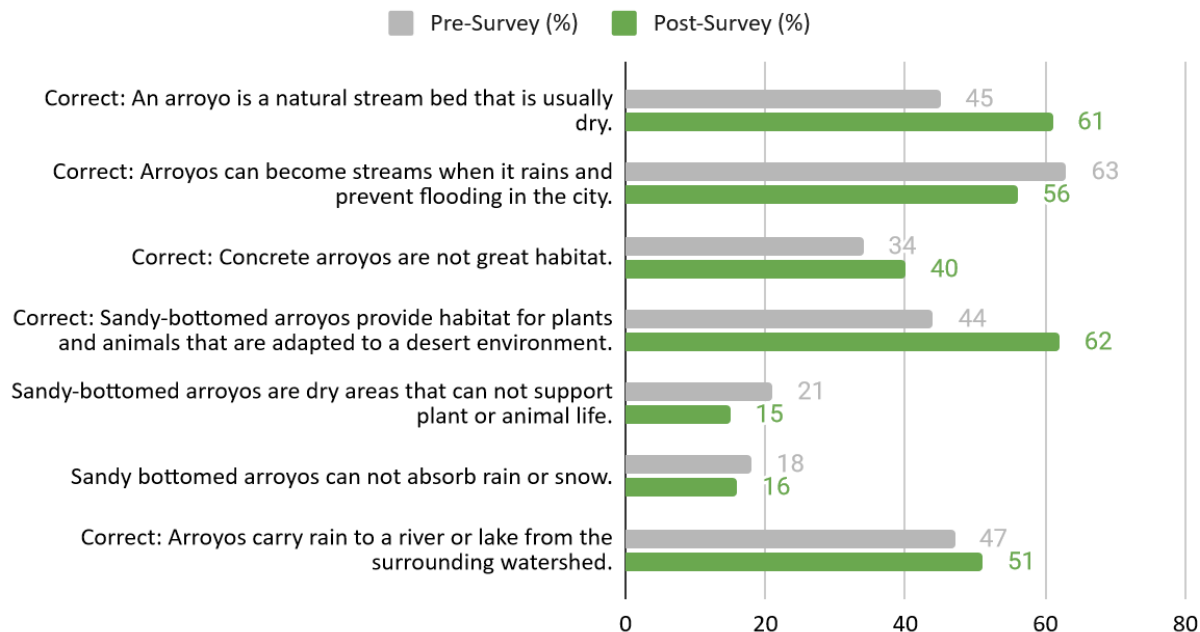


Comments

This year we do see an increase in correctly defining a watershed (an area of land that drains to the same waterbody) and a decrease in the wrong answer (a building that stores water). Since we are using the check all that applies method in this question, students might also have included “it is a water body such as a river, lake, bay or ocean” considering we covered a lot on the Rio Grande as a part of the Middle Rio Grande Watershed. Students did not seem to connect that “everyone lives in a watershed” as this was only mentioned in the program, however they did increase the response “the health of a watershed is connected to human activity.” This is an important success as ultimately we want them to see themselves as a part of the watershed and that their actions matter.

Item 2 Arroyo Function and Environment

Select all that is true about the arroyo environment: (AC 20-21)

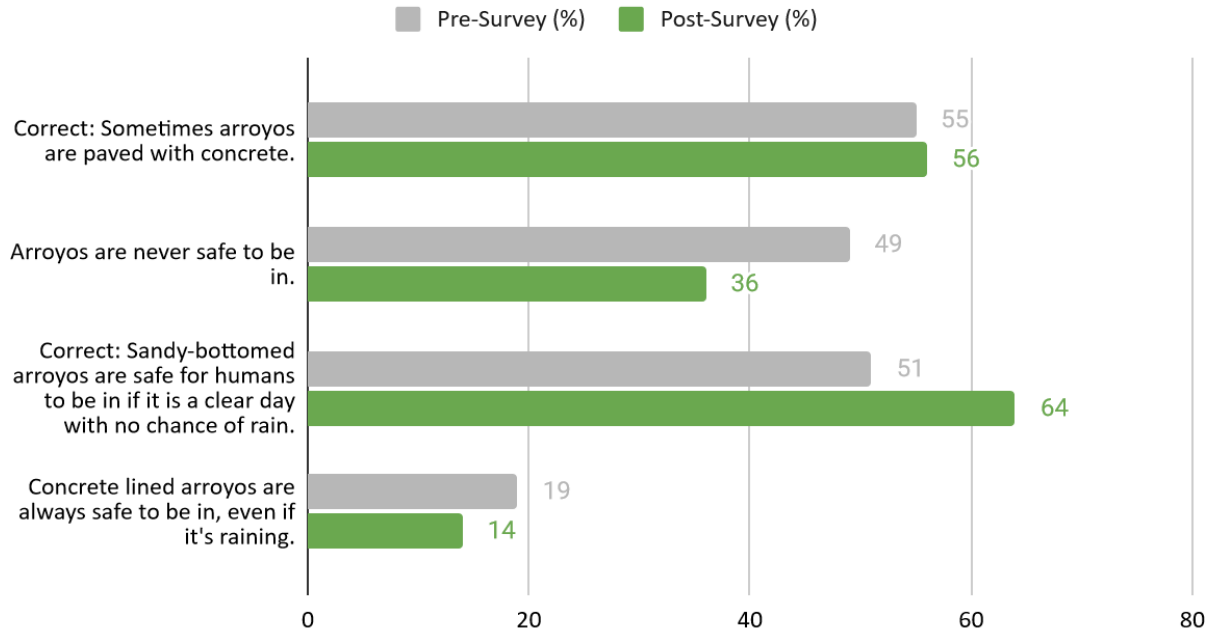


Comments

Positive outcomes from these graphs are that more students were able to correctly define an arroyo after our program and see an arroyo for its habitat benefits to local plants and animals. Being that the second question down and last question are similar, the responses might tell us that we did not really cover the role of arroyos in flooding but that around half of the students are aware of the role arroyos play in drainage. Even with a slight decrease in correct responses about arroyos preventing flooding, this still shows that around half of students are aware that there is a relationship between arroyos, rain and water bodies, such as the Rio Grande.

Item 3 Arroyo Safety

Select all that is true about arroyos and safety: (AC 20-21)

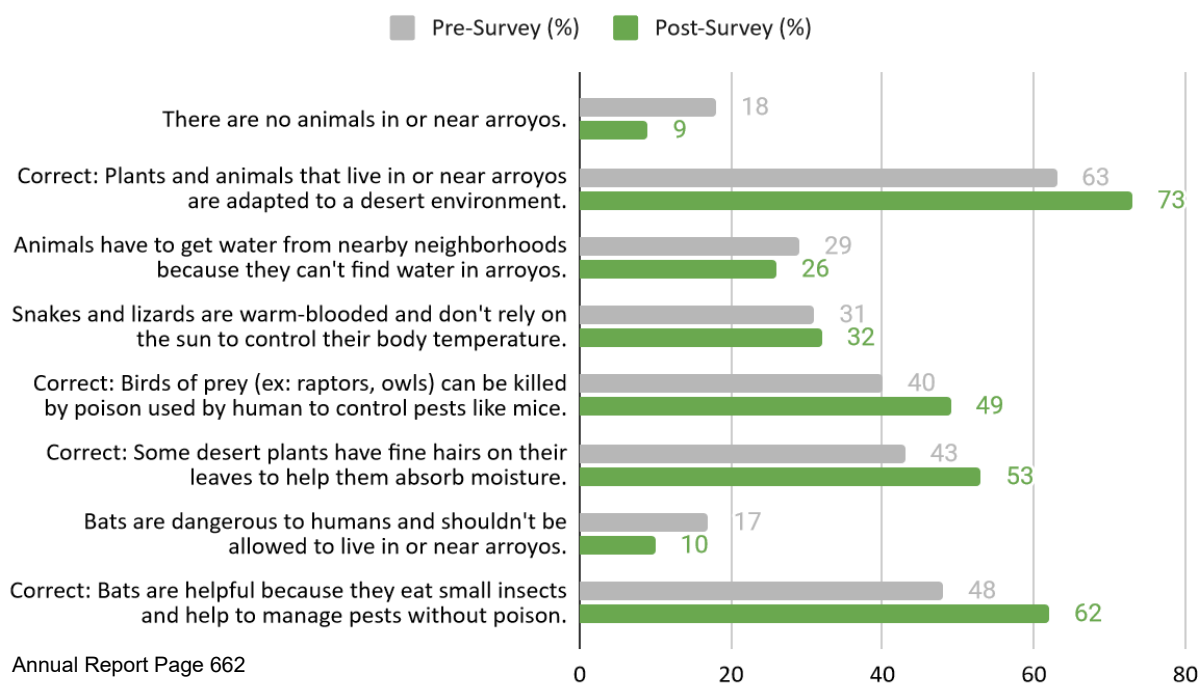


Comments

Positive outcomes of this graph are that more students understand the specifics of arroyo safety, demonstrated by a decrease in answers “arroyos are never safe” and an increase in “arroyos can be safe when there is no chance of rain.”

Item 4

Select all that is true about local plants and animals: (AC 20-21)



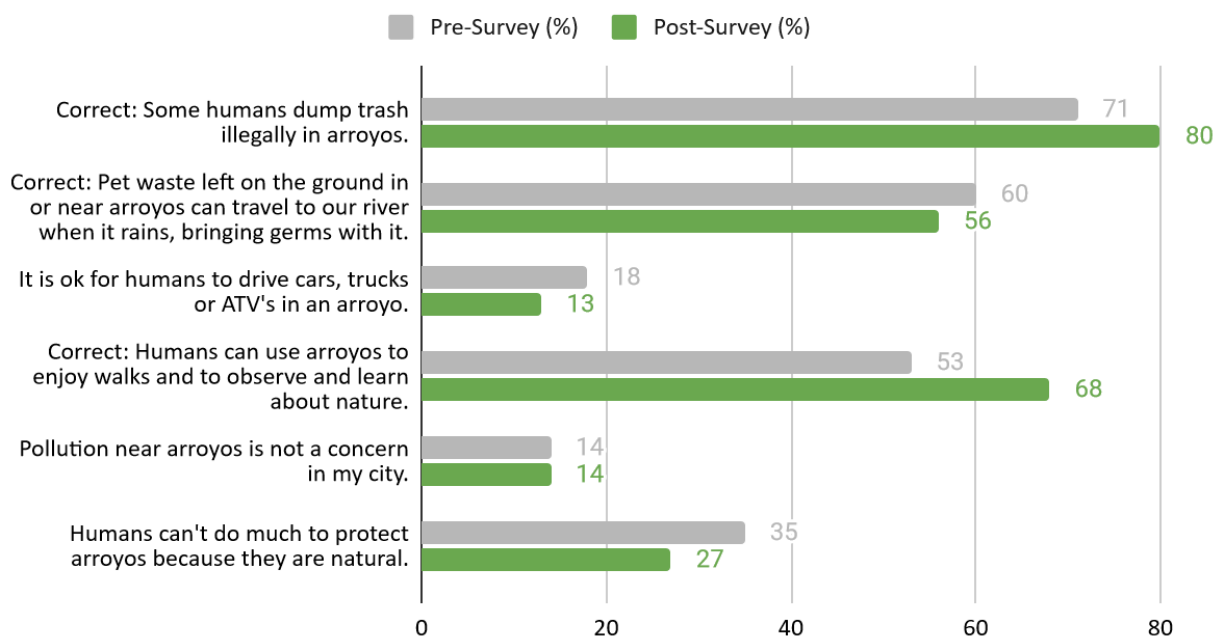
Comments

There is a lot of content in this survey question sequence that will be re-evaluated for its relevance to the program's learning objectives next year. Positive outcomes are that of the correct answers, we did see an increase in responses post-program. There is one error to note; the following statement should read “some desert plants have fine hairs on them to help them *retain* moisture.” We did discuss the function of hairs for solar reflectivity and wind protection to help plants prevent evaporation.

Item 5 Arroyos and Human Use

Select all that is true about arroyos and human use: (AC 20-21)

T



Comments

Positive outcomes for this question sequence are that there was an increase in students answering “Humans can use arroyos to enjoy walks and to observe and learn about nature” demonstrating an increased awareness of arroyos as a natural space that can be enjoyed and learned from, even in a year without an in-person arroyo walks. Research continues to show that nature connection is an essential requirement of ecological literacy (Children and Nature Network).

The pet waste question shows fewer correct responses from the post-survey, however in the watershed presentation we talked quite a bit about the benefit of permeable surfaces, such as sandy-bottomed arroyos, and the capacity for infiltration. It could be possible students are considering this when answering the question.

Appendix A



Ciudad Soil and Water Conservation District (CSWCD): Arroyo Classroom 2021

Purchase Order: AC_00030221

Performance Period: 9/22/20 – 5/31/21

Vendor: Talking Talons Youth Leadership (TTYL)

Mailing Address: P.O. Box 8, Cedar Crest, NM 87008

Contact Information: Betsy Fulreader, Betsy@talkingtalons.org, (505) 604-0098

Grant Details

of sessions completed: 70 of 70

of Sessions Live Streamed vs Pre-Recorded Video: 68 verses 2

of Students + Teachers Reached: 683 3rd grade students & 40 Teachers

Summary of Presentations

The first TTYL animal presentation taught students about snakes who depend on the Rio Grande Watershed Arroyo for habitat. Students learned how to respect and be careful around snakes, and the differences between non-venomous snakes and rattlesnakes commonly found in New Mexico. Students met (2) TTYL live non-releasable snakes in a virtual, live stream setting, where students could ask questions and become familiar with New Mexican snakes found in the arroyo.

The second TTYL presentation focused on New Mexican bats and birds who depend on the Rio Grande Watershed Arroyo for habitat. Students learned bats are important pollinators, they eat lots of insects and mosquitos, and learned about echolocation. Students learned about the stigmas around bats, and how to help advocate for bats. Students also learned about New Mexican birds of prey and song birds, their diet, compared identification differences between hawks and falcons, and were introduced to the Migratory Bird Treaty Act. Students explored TTYL's educational bird egg and feather cased specimens in a live-stream virtual setting.

Reflections

The virtual, live-stream setting went very well. Third-grade students and teachers thoroughly enjoyed the presentations. TTYL would be happy to participate in this project again.

Flexibility

There were a few technology difficulties including: defective teacher google-meet invite links, issues being admitted into the virtual classroom, sound issues in a presentation, as well as schedule conflicts as schools switched between virtual and hybrid classroom models. Creating a pre-recorded snake presentation for classes who missed the first presentation entirely helped TTYL save animal rental costs and staff time. Flexibility, patience, and collaboration with CSWCD were necessary to overcome challenges.

Highlights

At the start of a second visit for one of the classes, the TTYL educator asked if students remembered her from the last virtual visit to their classroom, and the class erupted with, "Yes!" Then the teacher responded, "the first visit was something they will never forget!" It was clear TTYL's visits were memorable and had an impact on participating students and teachers. Thank you for the opportunity!

Appendix B

Lesson Plans (Ciudad SWCD delivered lessons)

Activity Guide for 3rd Grade – Building a Watershed

1. What are we trying to teach students in this activity?

A watershed is an area of land where all the water flows (or sheds) into a common body of water. We live in the Middle Rio Grande watershed. A natural watershed has many permeable surfaces that help to clean water. Human's build a lot of hard-scapes. As water moves downhill, it carries sediments and other materials to the river. Water is a precious resource and we can help improve the quality of the river by picking up after our pets and not littering or throwing trash on the ground.

2. How can we tie this activity to our teaching goals:

Learning Objectives	Methods
We all live in a watershed. A healthy watershed keeps water clean.	Using models to demonstrate: <ul style="list-style-type: none">• elements of a “watershed” and how natural watersheds help to clean water and move water around.• Humans have impacts on the watershed (i.e. Hardscapes, Pollution)
The amount of permeable and impermeable surfaces in an area impact the watershed.	We observe and make claims about: <ul style="list-style-type: none">• What happens as water moves across “Hard” vs “Soft” surfaces• The proportion of hard and soft surfaces around us.• How this may impact our watershed.
Pollution increases in human environments. What we can do about it.	Using models we aim to demonstrate: <ul style="list-style-type: none">• Water can be polluted in human areas and is harder to clean with impermeable surfaces. All this polluted water flows to the river. Through discussion we: <ul style="list-style-type: none">• Talk about the importance of being responsible and how caring for the watershed in this way not only protects the water, but also helps the people and plants and animals that depend on the water as well.• Picking up after our pets and minimizing our trash, and the trash on the ground helps keep our river clean

3. How can we tie this activity to standards?

Performance Expectation	
5-ESS2 Earth's Systems	Disciplinary Core Ideas

3-ESS2-1 Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. 3-ESS2-2 Obtain and combine information to describe climates in different regions of the world.	ESS2.C: The roles of water in Earth's surface processes ESS2.D: Weather and climate
5-ESS3 Earth and Human Activity	
3-ESS3-1 Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.	ESS3.A: Natural resources ESS3.B: Natural hazards ESS3.C: Human impact on Earth systems

What we do (Science and Engineering Practices)	How we think (Crosscutting Concepts)
Developing and Using Models Analysing and Interpreting Data Using Mathematics and Computational Thinking Constructing Explanations Engaging in Argument from Evidence	Patterns Cause and Effect Scale, Proportion and Quantity Structure and Function Systems and Systems Models Stability and Change

4. How should this activity be organized?

Supplies:

- Large Sponge
- Baking tray
- Filter model (2 liter bottle, upside down with cotton ball, sand, rocks, leaf litter)
- Spray bottle with colored water
- hard surface (flat piece of tile, stone, concrete)
- Slideshow

I. Introduction (5 minutes): Hi everyone, I'm ----- and I'm here from a program called **Arroyo Classroom** - a program where you get to learn about your local environment. We are going to learn about your local environment and what you can do to protect and conserve it (Define conservation). You can ask what kids do to help the environment as an ice-breaker.

Open Presentation

1. Ask if they know what an Arroyo is. Picture on 1st slide.

An **Arroyo** is a dry stream bed. We don't get a lot of rain here, but water can flow here when it rains. Arroyos flow to the Rio Grande. Arroyo's are a part of the watershed, but we will define that shortly.

2. First, let's get a discussion going:

- How many of you used water before you came to school? How did you use it? Where do you think all this water comes from?
- Where do you get your water? How is it cleaned? (Rio Rancho = Aquifer)
- Can we all agree it is important to have clean water for all (including plants and animals)?

II. What is a Watershed? What role does it play in the water cycle? (20 min)

Part A: (5 minutes) We are going to learn about how the land around us helps to clean water.

1. Review the Water Cycle - precipitation, evaporation, condensation (water cycle dance video)

- **Important to remember water can't be created or destroyed. We are drinking the same water dinosaurs used. We have to keep what we have clean.**

Part B: (5 minutes)

2. Introduce the Watershed

- **What is Watershed video**
- Anywhere water falls on land is a watershed. What isn't absorbed will continue to run or shed downhill until it collects in a body of water. A watershed is an area of land that drains to the same body of water.
- Watershed has different names based on the body of water water ends up in. We live in the **Middle Rio Grande Watershed**. Write down the name of our watershed.

STOP PRESENTATION

Part C: (10 minutes)

- 3. Natural Watershed Helps to Clean Water. Ask students, before each demo what they think will happen and why? What evidence or prior experiences inform them?**
- Absorbs- permeable surfaces (spray water on sponge)

- Moves and Collects Water- (saturation of sponge) Arroyos, Wetlands, Rivers
 - Wetlands attract water loving plants that help filter and clean the water
- What happens to water that soaks in the ground- Filter demonstration - connect it to the aquifer.

Learning Objective: Permeable surfaces are important for filtering and cleaning water, and slowing it down.

- **Human impacts** - less natural features in watersheds, more impermeable surfaces, density of pollution
 - Demonstrate water sprayed on hard surface
 - Water doesn't absorb and it moves faster.

4. Compare water in a concrete arroyo and sand-bottomed arroyo, which moves faster?

Learning Objective: Concrete Arroyos are never safe. Sandy bottomed arroyos are ok to go in if no chance of rain.

III. Activity: What is the proportion of permeable to impermeable surfaces outside our home or school? (10 minutes)

1. **Observe outside** - look at the ground. How much is covered by surfaces that can absorb water like soil, sand, dirt, grass, small rocks, etc. How much is covered by hard surfaces- pavement (driveways, streets, etc). Talk about compacted soils.
2. **Guess the percentage of hard vs soft based on observations.** Students create their own pie chart- labeled Hard and Soft.
3. **What claims can we make about our watershed? What evidence supports our claims**

IV. What's In the Water?

(10 minutes)

1. **Discuss pollutants. Discuss what happens to polluted water.**

Experiment with how "pollutants" might travel through their watersheds.

- What is pollution?
- What forms of pollution exist in our city? Discuss each pollutant:
 - Plastic
 - Factories
 - Motor Oil (suggest a tray under or cat litter to clean it up)
 - Fertilizers (use recommended amount) - eutrophication
 - Herbicides or Pesticides (use recommended amount)
 - Dog Waste
 - Construction Erosion/Sediment

Learning Objective: With more hard surfaces - water moves faster, picks up pollutants and heads to Rio Grande without being cleaned.

V. Conclusion (10min)

- What do you think this means for our watershed - the Middle Rio Grande?

The water we drink comes from our watershed. Animals and plants also depend on this water. That's why it's important that we try not to pollute either the water or the land. Anything that pollutes the land will eventually wind up in the water.

- What might be ways we could reduce pollution in our watershed?

By picking up trash and picking up dog poop if we have dogs.

Activity Guide for 3rd Grade – Virtual Arroyo Walk

1. What are we trying to teach students in this activity?

Arroyos function as an important flood control measure and are essential landforms in the upland desert of Rio Rancho. Arroyos are also habitat to plants that have specific adaptations for living in a desert environment that experiences infrequent flooding. We can protect arroyos as habitat and take care of them so they help with flood control.

2. How can we tie this activity to our teaching goals:

Learning Objectives (Students will be able to:)	Methods
Describe arroyos function as flood control.	Using visual models (google earth and drone fly-overs) to demonstrate: <ul style="list-style-type: none">• Arroyos are caused by water flows from precipitation.• Arroyos are dry when there is no precipitation.• Arroyos lead to a larger water source- the Rio Grande
Describe who arroyos are habitat for.	Using their experience from previous Arroyo Classroom presentations: <ul style="list-style-type: none">• Student recall animals that live in or near arroyos Using models of different climates: <ul style="list-style-type: none">• Students can state plant needs in an arid climate
Desert plants have adaptations that allow them to survive in a climate with a great temperature range, high solar impact and little precipitation. Name a local plant species	Using models we aim to demonstrate: <ul style="list-style-type: none">• Various plant adaptations such as deep vs wide roots, small leaves, fine hairs and spines. Through discussion we: <ul style="list-style-type: none">• Explore how plants can survive in the desert climate, unique traits of cactus, name a specific native plant- Four Wing Saltbush and some ways to identify and find it.

3. How can we tie this activity to standards?

Performance Expectation	
5-ESS2 Earth's Systems	Disciplinary Core Ideas
3-ESS2-1 Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. 3-ESS2-2 Obtain and combine information to describe climates in different regions of the	ESS2.C: The roles of water in Earth's surface processes ESS2.D: Weather and climate

world.	
5-ESS3 Earth and Human Activity	
3-ESS3-1 Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.	ESS3.A: Natural resources ESS3.B: Natural hazards ESS3.C: Human impact on Earth systems

What we do (Science and Engineering Practices)	How we think (Crosscutting Concepts)
Developing and Using Models Analysing and Interpreting Data Using Mathematics and Computational Thinking Constructing Explanations Engaging in Argument from Evidence	Patterns Cause and Effect Scale, Proportion and Quantity Structure and Function Systems and Systems Models Stability and Change

4. How should this activity be organized?

Materials:

- [Google Earth maps slideshow](#) of arroyo in Rio Rancho
- [Native Plant and Desert Adaptation slideshow](#)

I. **Introduction:** This is our final presentation for Arroyo Classroom. Today we are going to learn more about the geography of arroyos and native plants that live in arroyos. Icebreaker: What have you learned so far?

II. Google Earth Arroyo Tour

- Introduce map and landmarks (Albuquerque, Rio Rancho, Sandia Mountains, Have students recall the name of our river)
- Review Watershed: discuss where the water flows to from different points in the land, begin to draw attention to arroyos on the map.
- Upper Watershed: Discuss how the arroyos are converging from smaller arroyos, note the area around the arroyo has roads but isn't developed yet. Remind students how

important our voices can be to help share what we've learned in Arroyo Classroom so everyone who lives here and might eventually live here can do their part in caring for our environment.

- D. Middle Watershed: Point out that there is more housing, development and hard (impermeable) surfaces at this point in the watershed. Bring their attention to the tire tracks in the arroyo.
 - What are these tracks from?
 - What might the impact be from driving motorized vehicles in the arroyos?
 - Share that it is illegal and why. Discuss other options for those kinds of activities where it is legal.
- E. Lower Watershed: Show the mouth of the arroyo meeting the Rio Grande
 - Ask: Do you see anything in place that would remove garbage?
 - Poll students: 1. Who has seen trash in an arroyo? 2. Who has seen trash larger than a television or microwave? 3. Who has seen trash larger than a couch?
 - What can we do to help keep our arroyos clean and safe for all?

III. Adaptations of native and drought-tolerant plants

- A. Introduce desert plants, share some fun facts about Yucca - state flower, edible roots - yucca fries.
- B. Compare climates - show side-by-side of a tropical climate (dense vegetation, cloudy, waterfall) vs. arid climate (sparse vegetation, sunny, no water). Talk about how plant's needs are different in these climates.
- C. Plant Adaptations
 - i. Dormancy
 - ii. Root systems (tap root or surface)
 - iii. Small leaves
 - iv. Fine hairs on plants
- D. Cactus
 - i. True or False Game
 - ii. Why do Cacti have spines video
 - iii. Photosynthesis and stomata
- E. Four Wing Saltbush
 - i. Adaptations and traditional uses of fourwing saltbush.

Arroyo Classroom Scavenger Hunt



Draw or describe each finding, such as size, color, shapes, texture, smells, location and more. You can even write questions you have about what you found! Please respect the wildlife and take an adult. Good luck!

☐ Wild animals tracks

☐ A plant without leaves

☐ A rock that feels warm or cold

☐ Cactus

☐ A plant with a color other than brown or green. What color?

☐ A wild animal on the ground

☐ A narrow leaf on a plant

☐ A hole in the ground made by an animal

☐ A bird in the sky

Arroyo Classroom 2020-2021

Appendix B Supplemental Materials

-SSCAFCA Activity Book and Educational Videos:



-SSCAFCA handouts:



Did you know?



SSCAFCA protects our community from flooding and erosion caused by big rain storms, and works to keep **stormwater** clean. Stormwater flows down **arroyos** into the **Rio Grande**.

Bugs like to live in **stagnant water** that collects in ponds and low places in the arroyos. Insects like mosquitoes can carry diseases that make us sick.

Brought to you by:

Almost all U.S. bats feed exclusively on bugs, and 1 bat can eat between 600 and 1,000 mosquitoes and other insect pests in just one hour. One bat can eat its own weight in insects in a single night!

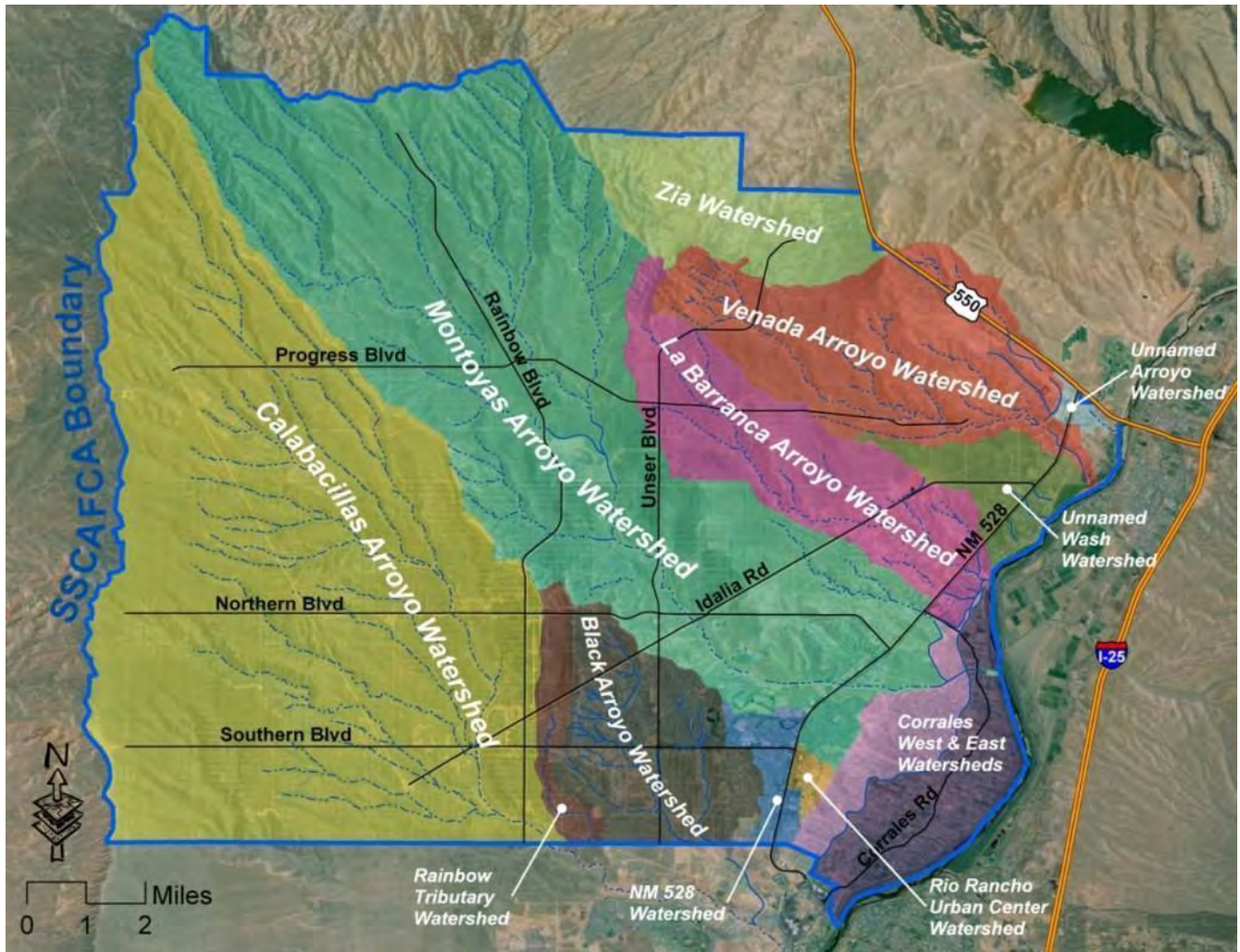
SSCAFCA

SSCAFCA provides **bat houses** to encourage bats to make their homes near our arroyos, and especially near **detention ponds** where stormwater runoff is captured and allowed to slowly drain.

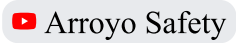


The more we help bats, the more pests they eat, so we don't have to spray pesticide that could wash down to the Rio Grande and **pollute** it.

SSCAFCA watershed map:



Arroyo Safety Video:





**Making Meaningful Connections by
Integrating Water Resources Topics
with Language Arts & Science**

2021 Report

Presented by
Ciudad Soil & Water Conservation District

June 2021

CONTENTS

<u>SUMMARY</u>	3
<u>PROGRAM DESCRIPTION</u>	7
Mission	7
The Big Water Questions	7
Background	8
Program Management and Financial Support	9
Participant Selection	10
Curriculum	10
<u>EVALUATION</u>	13
Blog Evaluation	13
Student Surveys	18
Appendix A (Virtual Field Trip Lesson)	35
Appendix B (Watershed Journal & NGSS alignment)	45

SUMMARY

This year, funding enabled 38 NM classes (859 students and 39 teachers) to participate in a *virtual* RiverXchange® program. Five of the twelve schools we served were Title 1. All program costs and coordination are provided free of charge to NM teachers. The program required \$55,132.36 in cash and generated a total match valued at \$25,960.76 in the form of in-kind contributions including presenter time and preparation for virtual presentations, production of video presentations and planning with partners for a virtual program.

PROGRAMMATIC RESPONSES DURING THE COVID-19 PANDEMIC

Pivoting RiverXchange® to the virtual learning environment was no easy task. There were logistical challenges with running a hands-on science program virtually, but between our partners and RiverXchange staff we were able to have an incredibly productive year. Our presentation partners had varying approaches and capacities for adapting their lessons to the virtual audience. Ensuring there was cohesion and consistency in the program took additional oversight and planning. In this case, it was extremely helpful to meet with other environmental educators and community programs faced with the same situation i.e. continuing our programs with the uncertainty of district-wide, administrative and individual teacher approaches to virtual learning. RiverXchange staff attended meetings with other local educators to discuss everything and anything we could do from online platforms and technology; approaches in engaging an online audience; support for students, their families, and teachers; as well as how to be a resource during this difficult time. Additionally this year, RiverXchange®, Bosque Ecological Monitoring Program and Valencia SWCD staff met regularly to discuss watershed and stormwater education collaboration opportunities, such as program continuity across grades and program assessment strategies. This effort was incredibly valuable to not only cope with the immediate challenges of 2020-2021, but to also improve core aspects of our programs and outreach.

The Watershed Journal

In the beginning months of program planning, RiverXchange staff determined that providing students with activities that could be completed at home to supplement the virtual learning environment was a priority. RiverXchange® is a hands-on science program and lacking access to the classroom for presentations became an opportunity to design lesson-specific activities for students to extend their learning at home. The result of this is the Watershed Journal (Appendix B), which was offered as a physical booklet to all RiverXchange classes this year. This booklet included 4 at-home activities focused on understanding residential stormwater pathways, aquifer function and groundwater filtration, the biological activity in wetlands and the impacts of pollution. Additionally the booklet included presentation reflection questions and a glossary, images for coloring and a letter to families. The activities in the Watershed Journal are aligned to Next Generation Science Standards and the journal was translated to Spanish to provide more inclusive resources to bilingual classrooms and ESL students. We plan to continue to use the Watershed Journal as a part of the RiverXchange® curriculum, which will be offered to participating teachers as well as free on our website as a watershed and stormwater curriculum resource.

Videos Production and Online Teaching

One silver lining of the global pandemic has been the production of professional videos of some of the presentations that RiverXchange offers. We anticipate these videos being useful in extending our outreach beyond classes that participate in the program and to draw in interest and support teachers who might be on the waiting list or who discover the program after the enrollment period. Teaching online has also opened up opportunities for greater outreach and a more durable program. In the case of inclement weather or other unforeseen circumstances that would prevent in person presentations, we know now we can easily pivot our program to ensure its continuation for participants. Links to all videos produced this year can be found under presentation information below.

Virtual Field Trip

It is difficult to replace the experience of students visiting the river and participating in pole planting as the stewardship component of our program. This year it was extremely important when planning the “field trip” component of the program to consider the capacity of teachers to include additional activities offered by RiverXchange beyond the immediate program. With the journal distributed to classes at the onset of presentations, RiverXchange staff believed the best response this year would be to create a virtual field trip presented directly from the Bosque and Rio Grande. After shadowing ABCWUA’s 4th grade and Sandia Mountain Natural History Center’s 5th grade virtual field trips, we determined that it would be necessary to have two educators on site to manage the virtual field trip. Things to consider when doing a virtual field trip are managing public interest (i.e. hikers walking by wanting to ask what we are doing), supporting lessons with materials and technology needs (battery charger), keeping the educator “on camera” safe from potential hazards and helping to keep time - to name a few. Funding was allocated from substitute and bus costs that were not needed this year to fund an additional educator, Astrid Hueglin, to support the field trips. Astrid, Jenny and Erin all contributed to the development of the field trip lesson plan. Additionally, we had educators from ABCWUA and SMNHC shadow our field trips and provide feedback.

TEACHER FEEDBACK

Teacher feedback is an invaluable resource for program evaluation and it continues to help us understand what teachers value and where we can improve. This year’s feedback continues to reinforce that RiverXchange® remains relevant and impactful in curriculum and content. Feedback demonstrates the RiverXchange continues to be valued for its ability to bring hands-on science in the classroom and teach about water resources issues, while addressing both Common Core English Language Arts Standards and Next Generation Science Standards. Additionally, when asked what other curriculum or programs teachers tie into RiverXchange, responses demonstrate how widely a local water resources education program can apply to various subjects and skills. Many teachers in Rio Rancho affirm that RiverXchange directly supports their district’s adopted science curriculum, HMH. Teachers mentioned tying our program into history, social studies, and other local programs like PNM, Sandia Mountain Natural History Center, ABCWUA and Sandia Labs. When teachers were asked about the blogging aspect of the program, many stated concerns with adding another digital platform to a year with so many new digital platforms, while others continue to state that blogging as an important learning outcome. Below are a few highlights from our teachers:

What are the greatest learning outcomes for your class as participants in RiverXchange?

Students became more aware of local water issues, and they learned to use digital tools to show their

learning. - Ackerman, La Mesa

My class really learned so much from this program. I think they enjoy learning about topics relevant to themselves and their environment. - Kittleson, John Baker

Increased awareness of their own personal ownership in caring for our water and river. - Anthony, Monte Vista

Students being able to participate in a virtual field trip and being able to get familiar with their immediate surroundings, relating it to their life. - Tafoya, MLK

An appreciation of how valuable our water resources are and how to help make a difference. - Kitts, MLK

If you can, please describe what aspects of RiverXchange are most helpful in achieving NM Stem Ready Science Standards.

Even in a virtual environment, the presentations were mostly able to take it to a hands-on level. They gave students some basic information to explore on their own, or with their family. - Turrietta, MLK

Students were able to connect the Ready standards and relate them to their personal lives. This can inspire them to view their immediate environment in ways they may have not been able to before. - Tafoya, MLK

RiverXchange helped with plants and organisms, ecosystems, and engineering, our human impact on the earth. - Carver, Duranes

Exploring our water resources locally and exploring what happens to our water. - Chacon, Zia

RiverXchange offers a range of entry points for students to engage with ideas, including hands-on activities, rigorous readings, project based learning and digital tools. - Ackerman, La Mesa

Please share any feedback you have concerning your experience with the program this year.

RiverXchange, in this tremendously challenging year...was amazing. The foundation videos/activities along with the follow-through/activities made this year, perhaps, more informative than ever. - Turrietta, MLK

Thank you for adapting your program to this crazy year of online/hybrid learning. I appreciated everything that you shared with my students. - Fox, Sandia Vista

You all did an amazing job this year with having to turn your entire program into a remote situation. Thank you so much!! - Kittleson, John Baker

Presentations

Program presentations were completed as follows:

Agriculture: 37/38
 Stormwater: 38/38
 Wastewater: 38/38

Drinking Water: 38/38
 Virtual Field Trips: 38/38
 Landfill Presentation: 16:16 (Rio Rancho only)

This year, numerous videos were created to support the virtual presentations. We hope to incorporate these videos onto our website as additional resources for following years. Links to these videos are provided below:

Topic	Video	Credit
Rio Bravo - “Wild River”, Riparian Ecosystem	Changing River #1 (23 min)	Video- Valencia SWCD, Ciudad & NFWF Lesson- Bosque Ed Guide Model
Rio Manso - “Tamed River”	Changing River #2 (20 min)	VSWCD, Ciudad & NFWF
Rio Nuevo	Forest Health- The Changing River Part 3 (24 min)	VSWCD, Ciudad & NFWF
	CABQ Open Space- Pole Planting Demo (13 min)	
	Rolling River: The Middle Rio Grande Watershed (39 min)	

PROGRAM DESCRIPTION

Mission

The mission of RiverXchange is to deepen students' and teachers' understanding and appreciation for their local river ecosystem, motivate participants to protect local water resources by conserving water and keeping their source water clean, and to provide a high quality, high impact outreach opportunity for funders and in-kind contributors.

The Big Water Questions

The optional curriculum frames program outcomes as “guiding questions,” known as *Big Water Questions*. A long term goal of RiverXchange is that students understand these questions and can formulate logical, fact-based answers by the time they finish elementary school. We believe that students who can synthesize water facts to understand larger water issues will have the proper critical thinking skills and foundation for further discussion in middle and high school so that they will become informed citizens and voters on water issues.

Understanding a Watershed

- Is every place in the world part of a watershed?
- Where does your community's stormwater go?
- How can surface water become polluted?
- How does the water cycle relate to weather?
- How are groundwater and surface water connected?
- How can groundwater become polluted?
- What actions can all of us take to keep water clean?

Water in Our Society

- In what ways does our society use water?
- Where does your community's drinking water come from?
- Does everyone have the right to use as much water as they want?
- Where does your community's wastewater go?
- What actions can all of us take to conserve water?

River Ecosystem

- How does water affect living things in an ecosystem?
- What role do forests play in a watershed?
- What role do wetlands play in a watershed?
- What are some of the ways scientists can determine the health of a river, lake, bay or ocean?
- What actions can all of us take to improve the health of our ecosystem?

Background

As producers of children's water festivals and other grade K12 water resources outreach in NM since 2007, the RiverXchange program creators observed early on that NM elementary teachers rarely incorporated water concepts in the classroom beyond what is required by the state (e.g., water cycle), and that most elementary teachers considered "water" strictly as a science topic. While teachers personally acknowledged the importance of conserving water and keeping source water clean, they continued to find that upper elementary students had little or no understanding of major water resources topics unless the teacher specifically integrated a wide range of water topics into the curriculum. For this reason, as well as successful festival work with upper elementary students, this age level was selected as the focus for the RiverXchange program.

RiverXchange was created to provide a free program that is fun, interesting, and easy to integrate into the normal curriculum. The hope was to motivate participants to explore water resources topics in depth. The program was originally designed to be carried out over eight months so that students spend more time developing a sense of pride and personal connection to their own river ecosystem, as well as a personal connection to a distant river ecosystem and the students who live near it. Today RiverXchange runs over the course of 3-4 months, as a response to the challenges of implementing a year-long curriculum with the ongoing demands on teachers and students time and requirements for testing and other curriculum.

RiverXchange began in 2007 as a pilot project of Experiential EE, LLC (under a services agreement with the New Mexico Water Conservation Alliance) and the National Great Rivers Research and Education Center, featuring partnerships between two fourth grade classes in Albuquerque, NM, and two fifth grade classes in Godfrey, IL. A curriculum was developed, a field trip to the river was coordinated, and partner classes "met" three times during the year via video tele-conferencing to present what they had learned.

After the pilot project, RiverXchange transitioned to a web-based technology called a wiki. This enabled the program to overcome limitations such as the high cost, availability, and time zone logistical issues associated with video teleconferencing – and easily involve more classes. The curriculum was updated to incorporate the writing component and classroom guest speakers were introduced to reduce teacher workload and bring up-to-date technical information into the classroom. In 2017, the program switched to a blogging platform called Kidblog and in 2021 Kidblog rebranded to Fanschool.

In 2012, ownership of RiverXchange transferred to Amy White of Orilla Consulting, LLC, who managed the program through July 2015. In August 2015, RiverXchange became part of the Ciudad Soil & Water Conservation District. In 2020, ownership and the trademark registration of RiverXchange® was transferred fully to Ciudad Soil and Water Conservation.

Since 2007, we have served over 19,300 students!

This year, the program featured the following components:

- Optional standards-based curriculum including hands on science and social studies lessons, as well as writing assignments
- KidBlog online posting and communication
- Teacher training on curriculum implementation and use of KidBlog
- Ongoing technical and motivational support

- Online class postings
- End of year teacher survey
- Pre and post student surveys (NM only)
- Coordination of at least four guest speakers into the classroom (NM only)
- Coordination of a virtual field trip to the local river or important watershed feature (NM only)
- Field trip leadership and activity planning (NM only)

Program Management and Financial Support

The program timeframe was July 1, 2020 through June 30, 2021. All components including fundraising, design, planning, implementation, and analysis were carried out by employees and contractors of Ciudad Soil & Water Conservation District, including:

Erin Blaz
Jenny Lloyd-Strovas
Astrid Hueglin
Endion Schichtel

Sponsors

- Southern Sandoval County Arroyo and Flood Control Authority (SSCAFCA)
- Middle Rio Grande Stormwater Quality Team (MRGSQT)

Sponsors provided a total of \$55,132.36 in cash.
MRGSQT - \$37,157.280 | SSCAFCA - \$17,975.08

Program expenses included:

- Technology services
- Office and educational supplies
- Coordination services (planning, implementing and assessing all program components)

New Mexico In-Kind Partners

- Albuquerque Water Utility Authority
- City of Albuquerque – Open Space Division
- City of Rio Rancho – Environmental Programs Office
- City of Rio Rancho — Parks, Recreation and Community Services Department
- Sandia Labs
- Sandoval County Cooperative Extension
- Bernalillo County Cooperative Extension

In-Kind contributions totaled \$25,960.76

For NM classes, in-kind contributions included virtual guest speaker coordination, prep and presentation time and video production of presentations. In-kind match is significantly lower than any other

year due to restriction of field trips, where significant resources and time are donated by our partners at the City of Albuquerque Open Space Division, students, chaperones and teachers. Funding was also contributed from a National Fish and Wildlife Federation Grant Ciudad SWCD was awarded as a sub-grantee in partnership with Talking Talons. These funds supported video production of the rolling river and changing river videos, as well as far materials and maintenance on the rolling river trailer.

Participant Selection

All 38 participating NM classes were fifth grade classes, distributed as follows:

Bernalillo County	Sandoval County
A Montoya (3)	Colinas del Norte Elementary (5)*
Cochiti Elementary (2) *	Martin Luther King, Jr. Elementary (6)*
Duranes Elementary (1) *	Sandia Vista Elementary (5)
John Baker Elementary (4)	
La Mesa (2) *	
Monte Vista Elementary (2)	
North Valley Academy (1)	
Seven Bar Elementary (4)	
Zia Elementary (3)	
22 classes, 520 students	16 classes, 339 students
* Title 1 school	TOTAL - 36 classes, 859 students

Curriculum

The core curriculum of RiverXchange is delivered through a series of presentations that are guided by the “Big Water Questions.” Over the years, RiverXchange staff have developed a curated list of activities that support the core program curriculum, along with reflection prompts specific to each presentation. We strive to incorporate emerging water resources issues into the curriculum, increase networking opportunities for teachers, reduce teacher workload, and align the curriculum with the appropriate district adopted standards.

With the adoption of Next Generation Science Standards (NGSS) in New Mexico, RiverXchange staff have undergone professional training in these standards to improve the program's alignment to NGSS. The NGSS framework is quite different from past science standards as the emphasis is on developing a deeper understanding of science concepts and practices rather than content knowledge. This shift is extremely beneficial for environmental education programs because of the value placed on “doing science;” i.e hands-on practice, inquiry-based learning, experimentation, engineering, design, evidence building and so much more. RiverXchange is uniquely situated to help classroom teachers meet NGSS standards AND the common core as it integrates hands-on science, as well as digital literacy and language arts skills.

This year, in response to school closures we created a completely new resource to the program - The Watershed Journal - including four activities aligned to NGSS. The inclusion of this resource has the benefit of providing students with hands-on extension activities that support further inquiry and investigation into the water resource topics of our core curriculum. Each Watershed Journal Activity has an NGSS alignment document (Appendix B). In reviewing and evaluating our programs alignment to NGSS, staff have identified ways to help RiverXchange improve with the evolution of science teaching in schools. Next year, staff plan to redesign the current RiverXchange “curriculum” (a collection of resources) to a more formal program guidance document. We anticipate the benefits of this formal guidance will create more continuity across classroom experience, more clarity for teachers on ways to achieve the cross-communication aspect that we strive to achieve through the blog, and an opportunity to strive for RiverXchange Excellence.

RiverXchange Excellence is not a formal component of the program as of yet but this year we experimented with awarding students, nominated by teachers or their classes, for demonstrating excellence in their engagement and active role in the program. It appears that this format was beneficial for recognizing students for their work beyond the blog, as in years past we’ve awarded classrooms solely for their collective achievements on the blog. Moving forward, excellence awards can be useful in motivating classes towards stewardship activities beyond the core curriculum of RiverXchange and thus become a more impactful driver of behavioral change in water conservation.

In following the teacher feedback and yearly engagement of students and teachers alike in different aspects of our program, it appears that a more formal curriculum guide along with RiverXchange Excellence acknowledgment could be extremely beneficial to the core participants, as well as useful to expand our reach. With the creation of video resources and the Watershed Journal this year, making these resources available online with clear guidance on how to implement them will make RiverXchange an more accessible and useful program to classrooms in New Mexico and beyond.

Guest Speakers

We coordinated at least 4 guest presentations to visit each NM classroom. In all cases, guest speakers were water resources professionals from local agencies. Topics included:

- watershed/nonpoint source pollution
- drinking water
- wastewater
- water and agriculture

- landfills (Rio Rancho only)

Field Trips

One of the most impactful components of the RiverXchange® program is a field trip to an important, local feature of our watershed. As stated above, we provided students with a virtual field trip from the Bosque and Rio Grande, just south of Tingley ponds. An outline of the lesson plan is included in Appendix A .

While there was no way to replace planting a tree in the Bosque, we took the opportunity to dive more into depth into the historical and cultural history of the Middle Rio GrandeValley, with an emphasis on flooding, flood control, native and invasive species, and our role in watershed health. The virtual field trip ran for 2 hours, which was long for a typical class, however overall student engagement was impressive. Using the google meet platform allowed us to answer questions from chat or directly from students and often demonstrate immediate and specific examples to questions on screen. Student writing on the blog demonstrated that students were able to identify specifics about our local riparian ecosystem, human impacts on this ecosystem, and maybe most importantly an interest in visiting and exploring the Bosque and Rio Grande with friends and family. See a student post reflecting on the field trip from Mr. Turrietta's class below:

While we did the field trip I learned so much. Since I learned so much I wanted to talk about some of these things I learned. This includes Cottonwood trees, Animals and their evidence, and finally How the river has changed. There may also be some fun facts at the end.

One of the first things I want you to learn about is Cottonwood Trees. I learned how to measure them, How to plant them, I learned how to tell if a Cottonwood or another tree, and so much more. I will only be talking about how to plant a Cottonwood and how to tell the difference between a Cottonwood or a different tree. How you can tell if a tree is a Cottonwood or a different tree is a Cottonwood tree has a spade kind of shape. A Cottonwood tree also has a rough and ridged type of bark. Next how to plant a tree. How you plant a Cottonwood tree is you get a branch cutter and cut down the tree. You then take off all of the branches near the bottom. (this is so the tree can make new roots.) Next you grab a shovel and dig a hole as deep as you can make sure it's next to the water. Soon after you plant the tree and put the dirt back in the hole. That now concludes the Cottonwood category.

In this next section I will be talking about animals and their evidence. During the field trip we learned about scat, exoskeletons, and bite marks. First I will be talking about scat. (Scat is animal poop.) During the field trip we learned about different kinds of scat we also saw different kinds. We saw porcupine scat, bunny scat, and owl scat. Porcupine scat looks like little ovals like pills kind of. Bunny scat looks like little circles. Finally Owl scat it actually named palets. Owl palets look like a smooshed circle. Next when we were looking at some branches we saw some exoskeletons of this type of bug it kind off looked like a beetle exoskeleton. Finally when we were looking at some bush kind of thing we saw beaver bite marks they were very interesting. Also when we started the field trip there was some geese I think. That concludes the animal category.

For our final category were going to talk about the history of the Rio Grande River and its history. A long time ago people came to settle near the Rio Grande to have water and to farm. Do to the farming the people had to clear a lot of the land out causing the land to stop reproducing. People would also but Jetty Jacks so when it flooded it would catch

and stop the trash, branches, and the leaves from entering their farms. This no the only that has happen the river went from windy river to a straight river to a super windy river. I hope you can see how much the river has changed. This concludes our final category.

Fun Facts!

1. We live in the Rio Rancho Watershed!
2. We get our water from the aquifer witch gets its water from the ground!
3. The Rio Grande River starts in Colorado and flows in to Gulf of Mexico!
4. Cottonwood trees need flooding to reproduce.
5. Porcupines sometimes are in the trees so next time you look in a tree.

I hope you enjoyed this. I hope that you have learned something new! I also hope that you can share some of these facts with a friend! Hope you had fun talk again soon!

EVALUATION

Blog Evaluation

Engagement

The blogging component of RiverXchange had some interesting challenges this year. Primarily some teachers found it challenging to incorporate because so many other new digital platforms were being required in order to meet the demands of virtual teaching. In addition, coordination time that would have been spent monitoring the blog and encouraging and supporting posts was redirected to support developing the watershed journal and virtual field trip, and other tasks needed to pivot and adapt the program to this year's unique circumstances. Some time was also spent working with Kidblog representatives learning their new platform - Fanschool. This platform launched in late spring, with select RiverXchange teachers testing the platform out in late winter/early spring. Ciudad SWCD did support the hire of a temporary and part time contractor Endion Schichtel, who was able to spend some time on the blog reviewing and responding to students' entries. In a normal year, RiverXchange staff will recruit and orient partner classes from outside of New Mexico to use the blog, so that our classes can exchange information and ideas pertaining to their respective watersheds. In consideration of the added challenges for classroom teachers this year, we decided to forgo recruiting partner classes this year and focus on ensuring our program adequately met the needs of our New Mexico teachers.

Of the teachers that did use the blog (and who were mostly returning teachers) they did so effectively. Of these classes, many students had multiple posts, some of which reflected on the presentations, some of which posted their projects from the watershed journal and even other related studies from their class. Posts this year had a wider range of media-type than ever! We saw a lot of student videos posted on the blog of their watershed journal activities which was helpful to see how we might

better introduce and frame the activities

Blog Images

For my water filter I used cotton, napkins, and Q-tips. The glass cup is how the water looked like before and at the bottom of the plastic cup is how the water looked after.





So I cut a bottle in half and poked holes through the lid. Then I put cotton balls towards the lid with activated charcoal. After that I put more cotton over the activated charcoal. Soon after I put thin sand and then I put coarse sand with pebbles over it. First the sand and pebbles take out some of the larger sediments. Then then the cotton cleans out some of the sand and dirt. Soon after the activated charcoal helps purifies the water and the cotton takes out rest of the fine sediments. I worked.



Alina Trujillo-Sando
Sat Dec 12 2020

Storm water will usually flow down my road and driveway. The water will most likely flow into the water drain beside my house. How I can help keep our river clean is by making sure there isn't any leftover rappers and litter on my driveway, or anything on my front yard. I can also check for any other things that can effect the river and how clean it is.



Brandon Smeltz
Fri Dec 11 2020

The storm water at my house goes down the road in a storm water drain or goes down where the arroyo to the the Rio Grande. We can keep our rivers clean by picking up trash, picking up our pets waste, and not using too much fertilizer/ weed killer. (Sorry don't have a picture).



Frida Gruber
Fri Feb 05 2021

Some things that should NEVER be put down the drain are food, grease, fat and oils, cotton balls and paper towels, and coffee grounds.

Q 1



Emma Gilbert
Thu Feb 04 2021

What is a water bear and what job do they do?I learned that water bears are tiny animals that (under a microscope) look like seals, at least to me. Water bears are made up of cells, and (like cells and other miniature animals) it is their job to decompose the sludge that is left-over from the primary and secondary clarifiers.

Q 2

**Hunter**

Fri Feb 05 2021

...

My favorite part of the field trip was how we found different types of soil. I was able to predict that there was a beaver from bite marks on a small tree. I learned that you can find porcupines in trees, and that you can find out how much carbon is in one tree. Next time I take a walk I will look for animals and their tracks.

**Chloe**

Fri Feb 05 2021

...

Hello! My favorite part of the field trip was seeing how to measure trees! It was just so cool! The animal I identified was a porcupine. Something new that I learned that you need to look for porcupines in trees! I also learned how to look for signs that animals were there. One of the activities I will do is I will probably look for the evidence of nature! That is what I learned and what I enjoyed doing on the RiverXchange virtual field trip.



Student Surveys

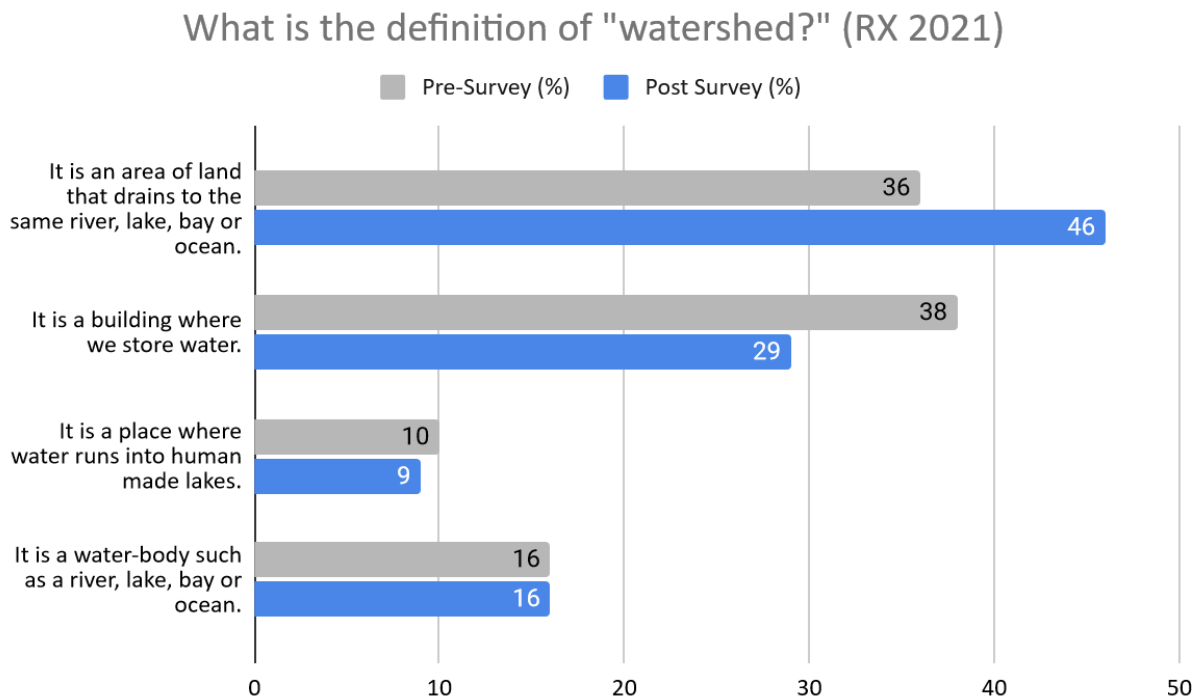
A key component of RiverXchange is its measurable goals relating to student performance. We collected quantitative data on student performance by way of a pre and post survey and qualitative data by reading what students submitted on the blog. The survey includes questions that relate to environmental attitudes and behaviors as well as knowledge gained relating to our learning objectives.

Pre/Post Behavior Survey

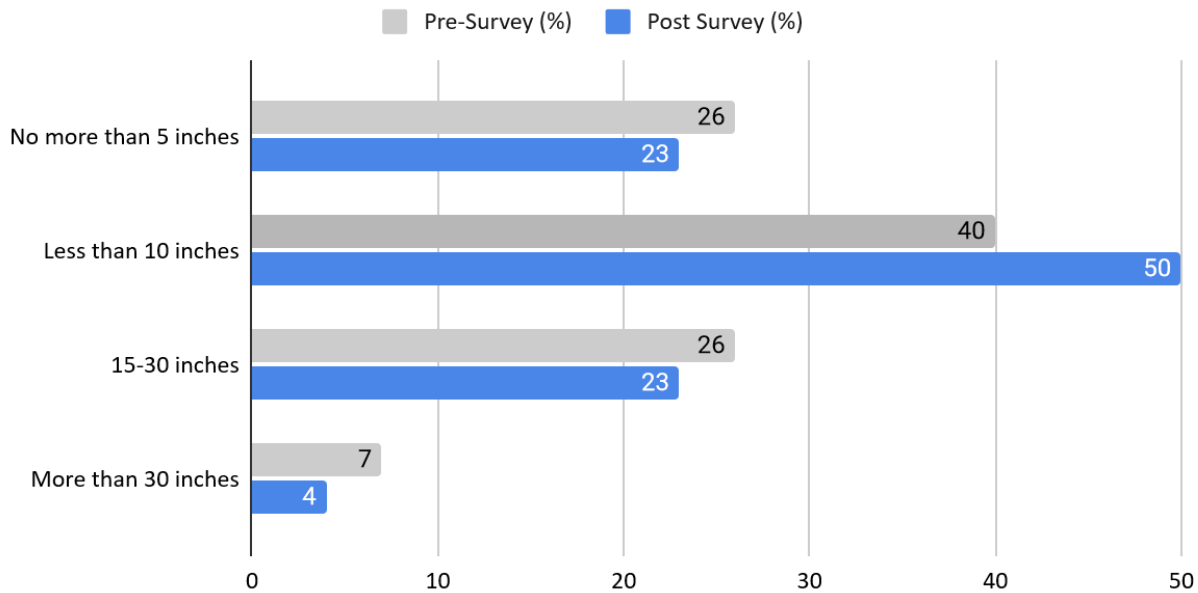
In order to quantify the learning outcomes achieved through RiverXchange, we ask our teachers to have their students fill out a survey prior to, and upon completion of the program. Below, you will find a series of graphs used to illustrate the change in responses between the pre and post surveys. This year, 539 students completed the pre-survey, while 452 completed the post-survey. In order to account for this small discrepancy in participation, the number of each given answer has been calculated as a percent of the total number of responses received for each given survey. We continue to refine the survey and our programming year after year based on teacher feedback and metrics gathered from these surveys.

RiverXchange Graphs for Pre-Post Surveys for 2020-2021

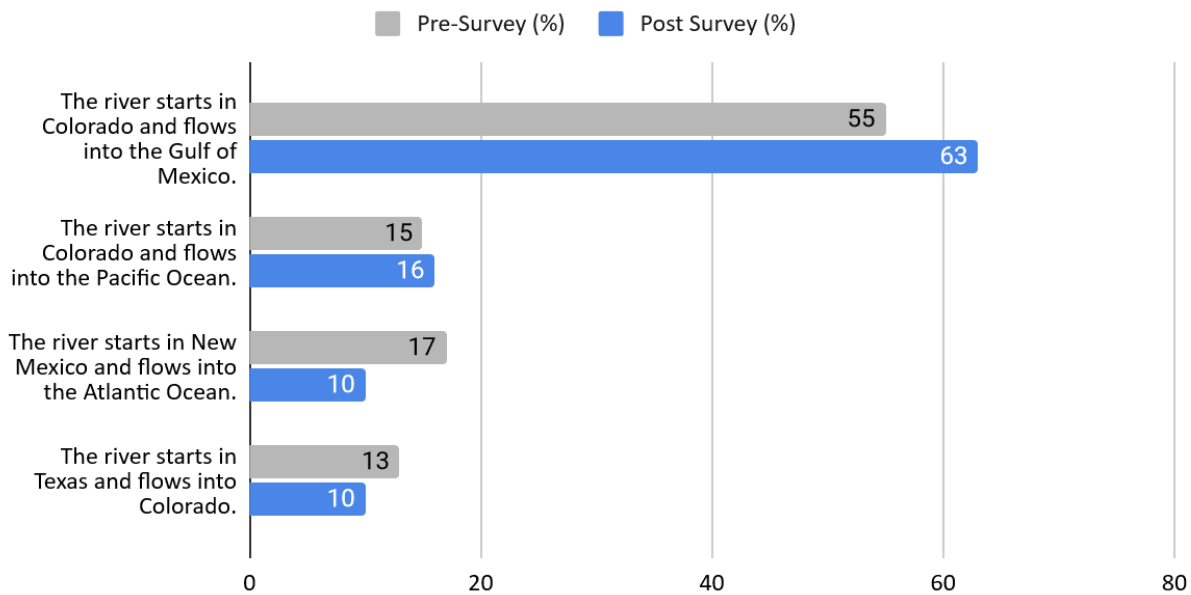
General RX Questions



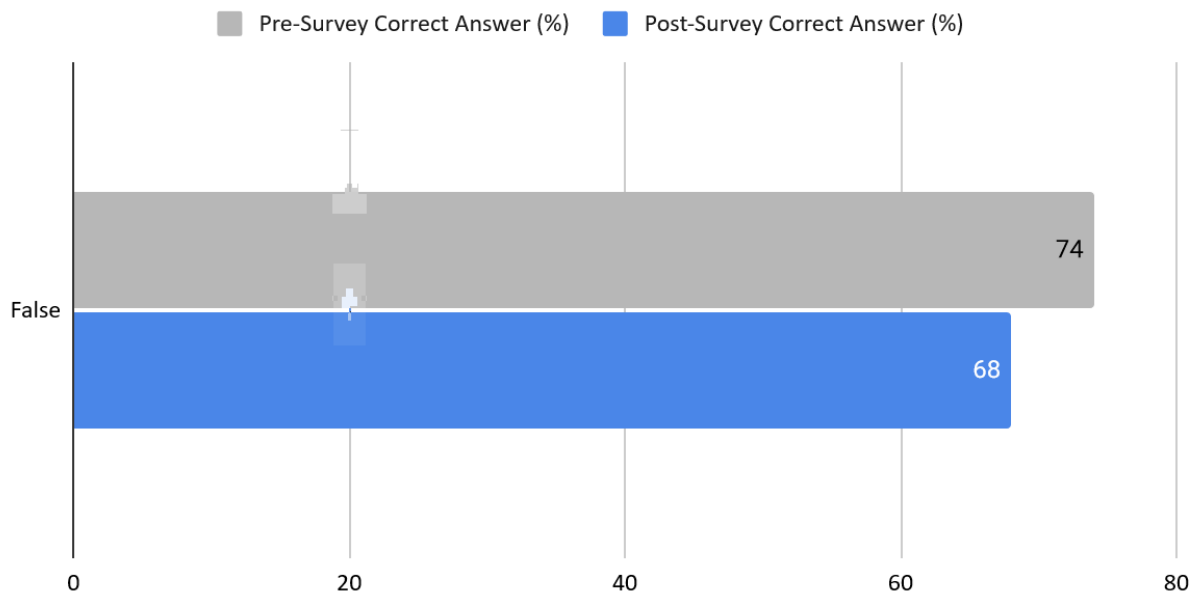
How much precipitation does your city (Albuquerque or Rio Rancho) receive each year, on average? (RX 2021)



Where does the Rio Grande River start and eventually end? (RX 2021)

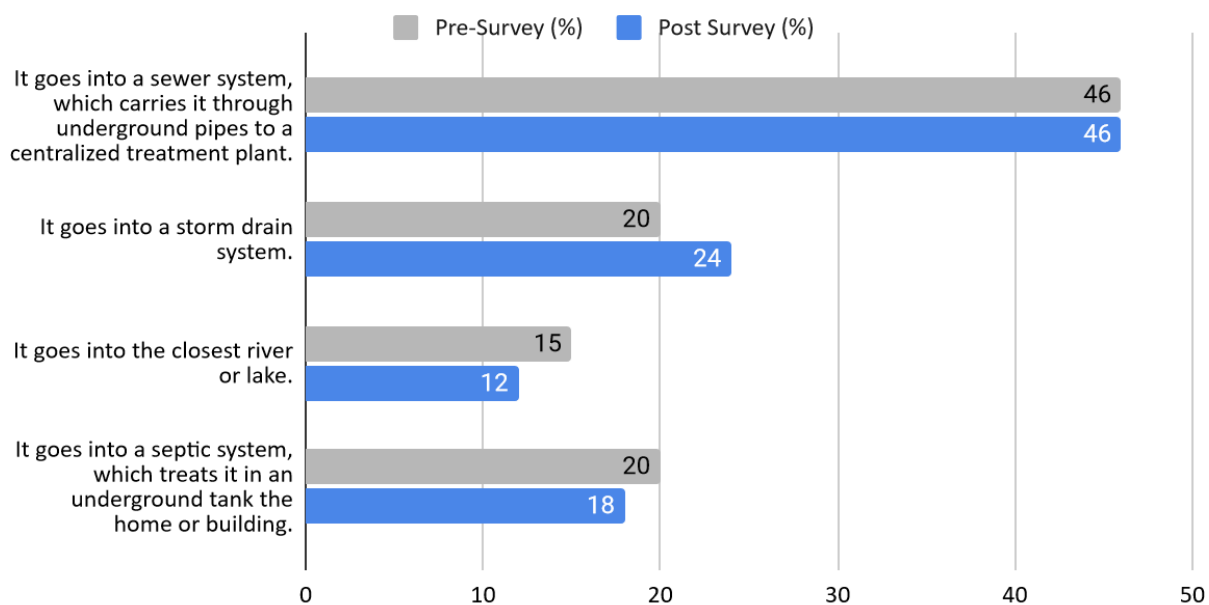


TRUE or FALSE. When it rains, stormwater is cleaned before it enters the Rio Grande. (RX 2021)



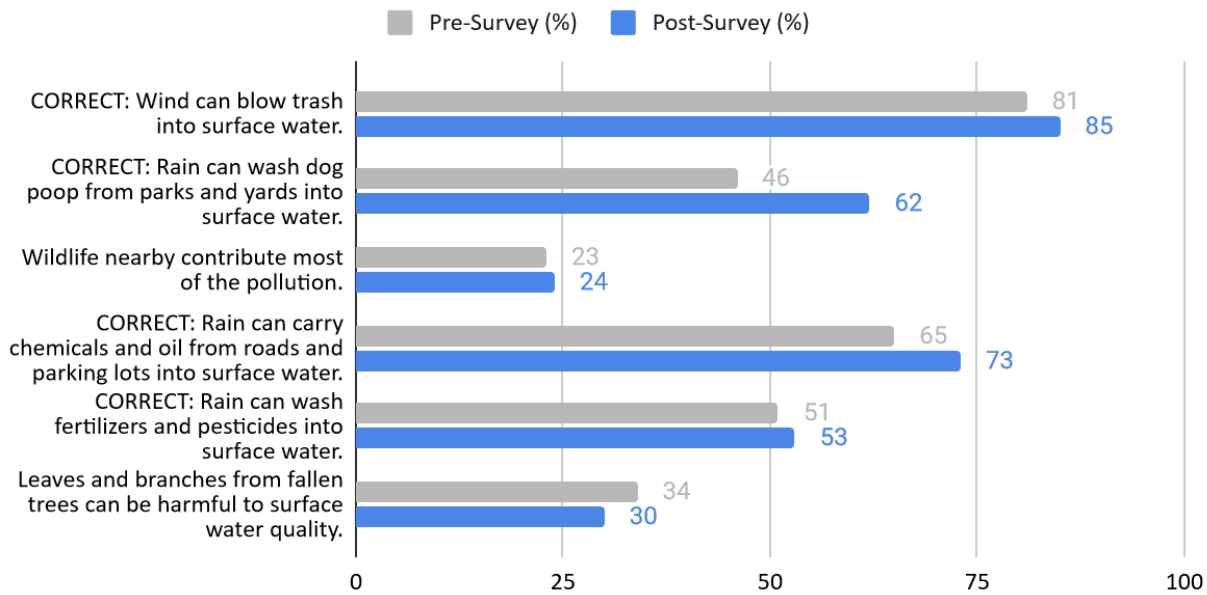
Comments: Backward movement has occurred over the past two years on this question. It could be because they learned that healthy ecosystems around rivers are vitally important to water quality. Then, when they went to answer the question after the program, they changed their answer based on their new knowledge.

Where does your city's wastewater go? Choose one answer. (RX 2021)



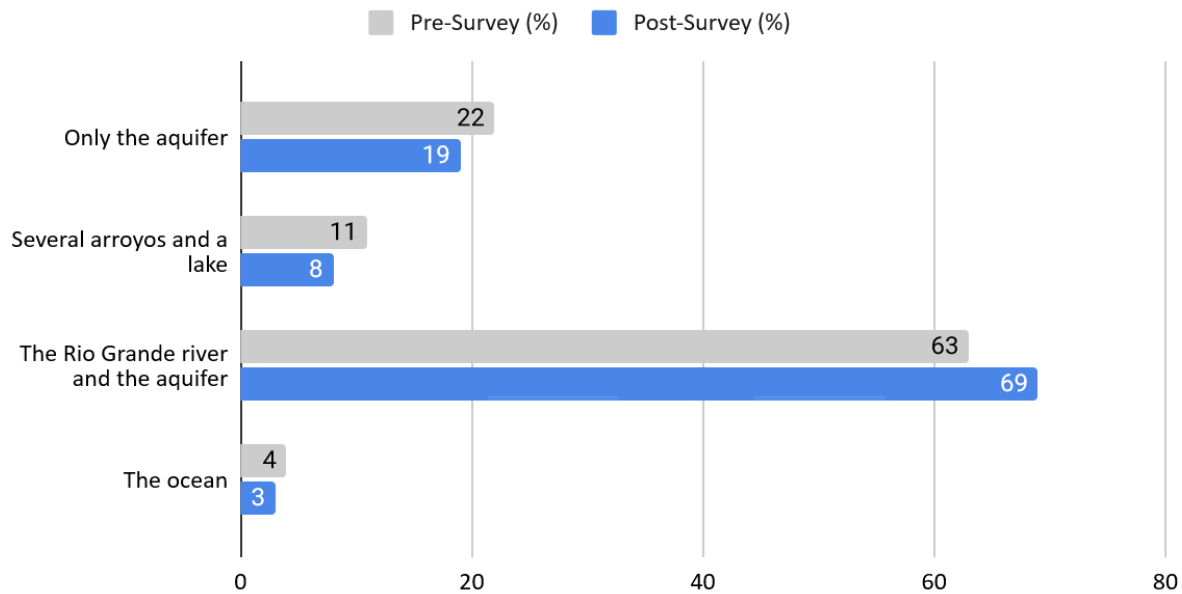
Pollution Question

How is surface water (like a river, lake, bay or ocean) often polluted?
Choose all answers that apply. (RX 2021)

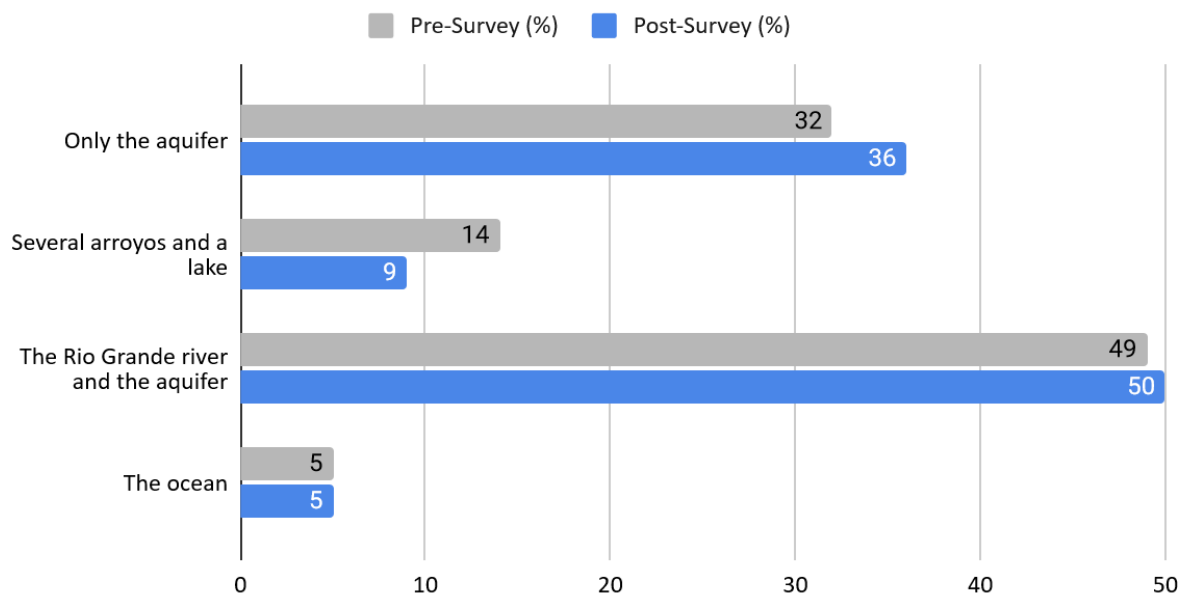


Watersource Questions

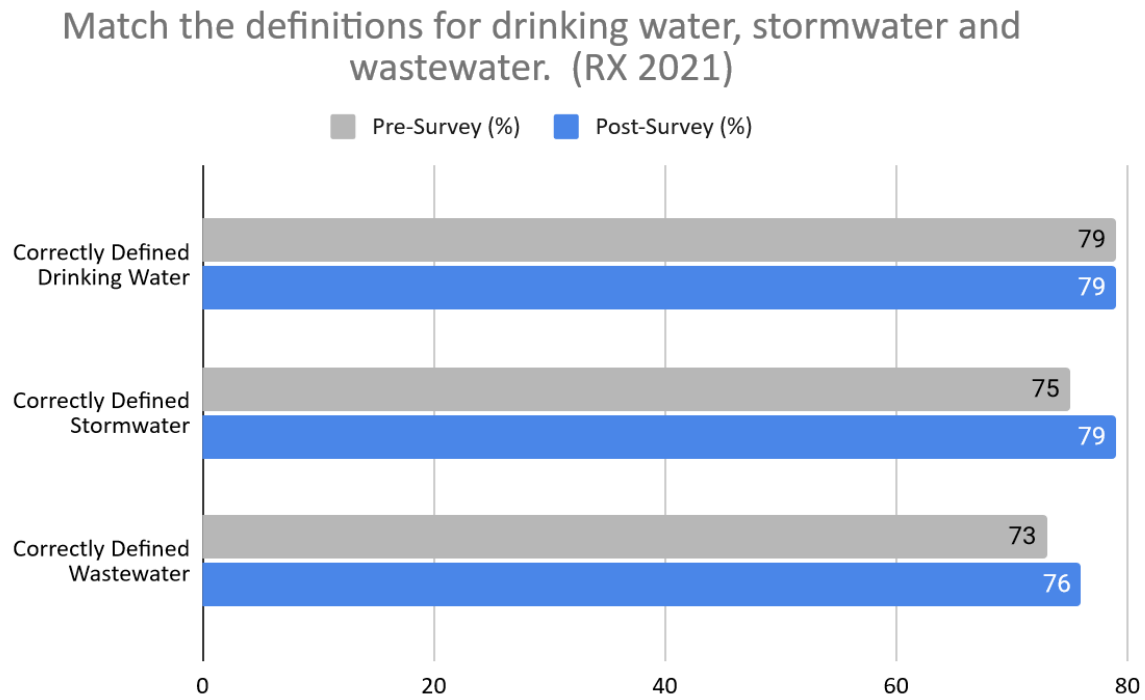
ALBUQUERQUE STUDENTS ONLY: From what direct source(s) does your city, get their drinking water? (RX 2021)



RIO RANCHO STUDENTS ONLY: From what direct source(s) does your city, get their drinking water? (RX 2021)

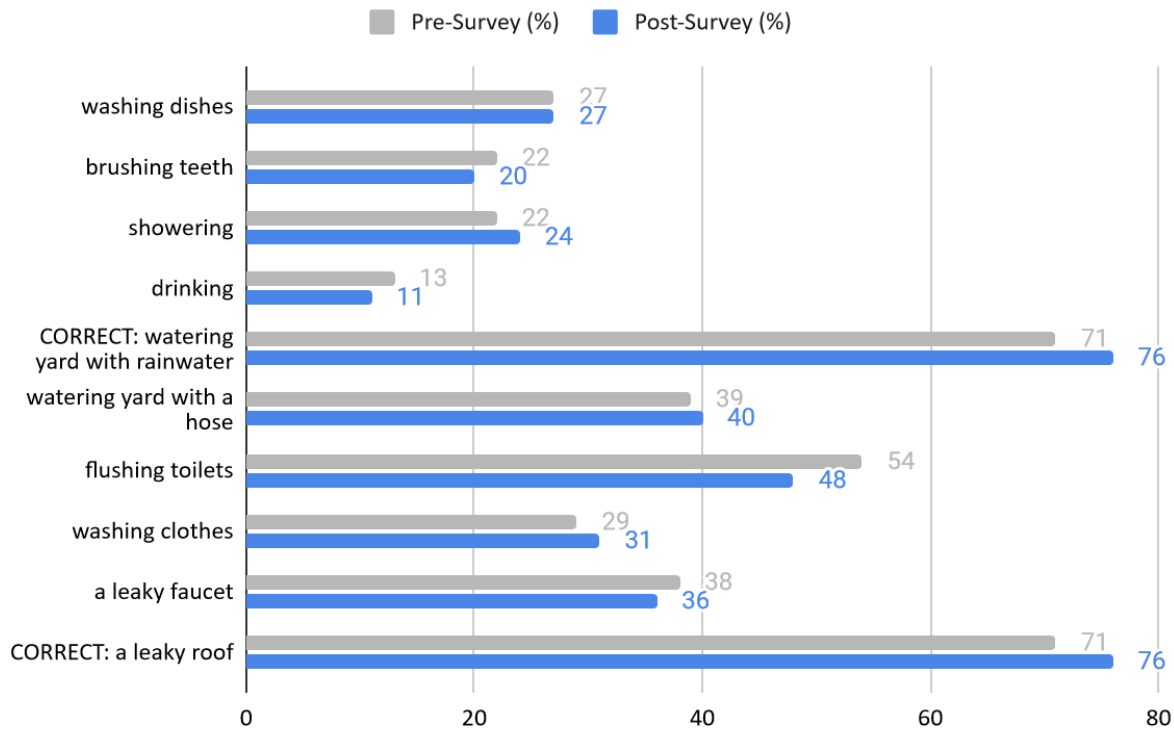


RX Definitions



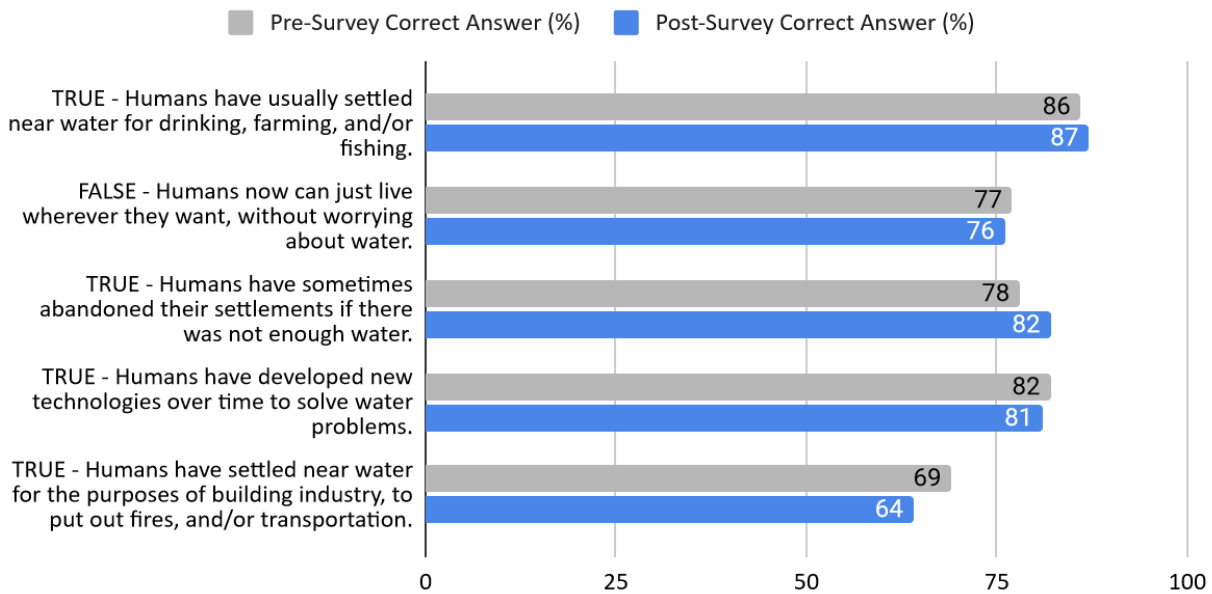
Precious Water

Which of these things DO NOT use our precious, clean drinking water? Choose all that apply. (RX 2021)



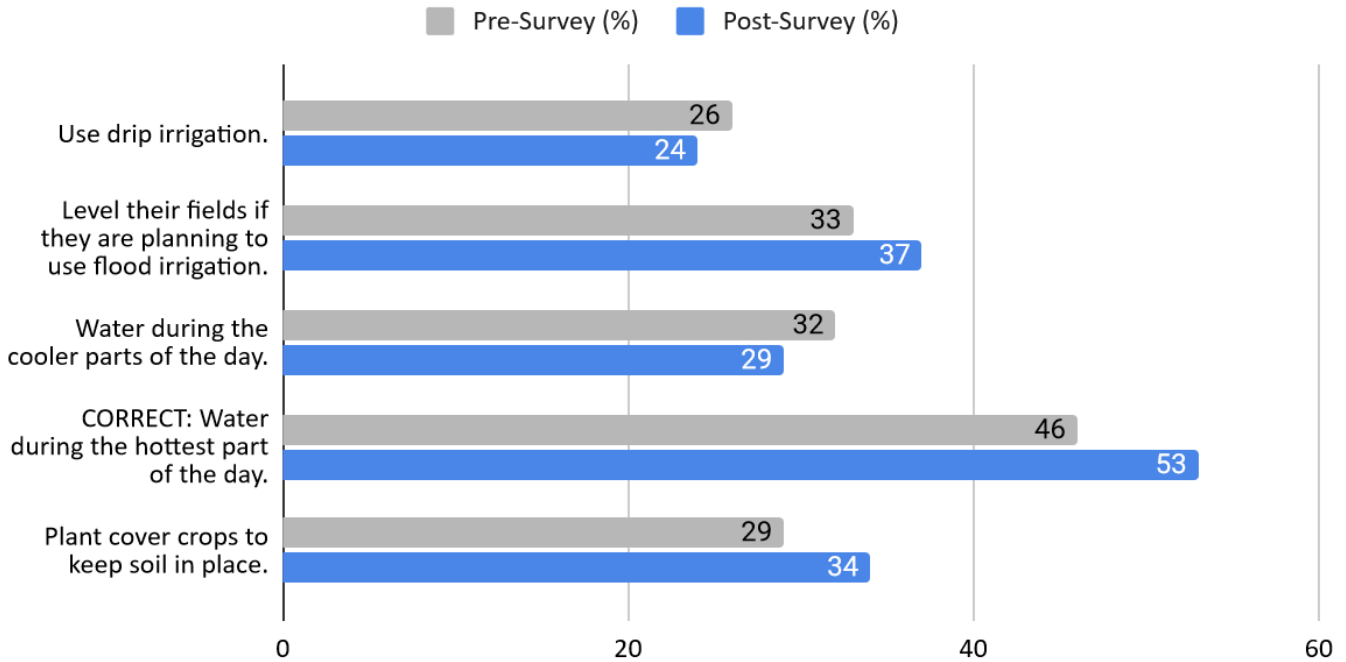
RX Culture

TRUE or FALSE. Water has influenced human settlements and culture in the following ways: (RX 2021)



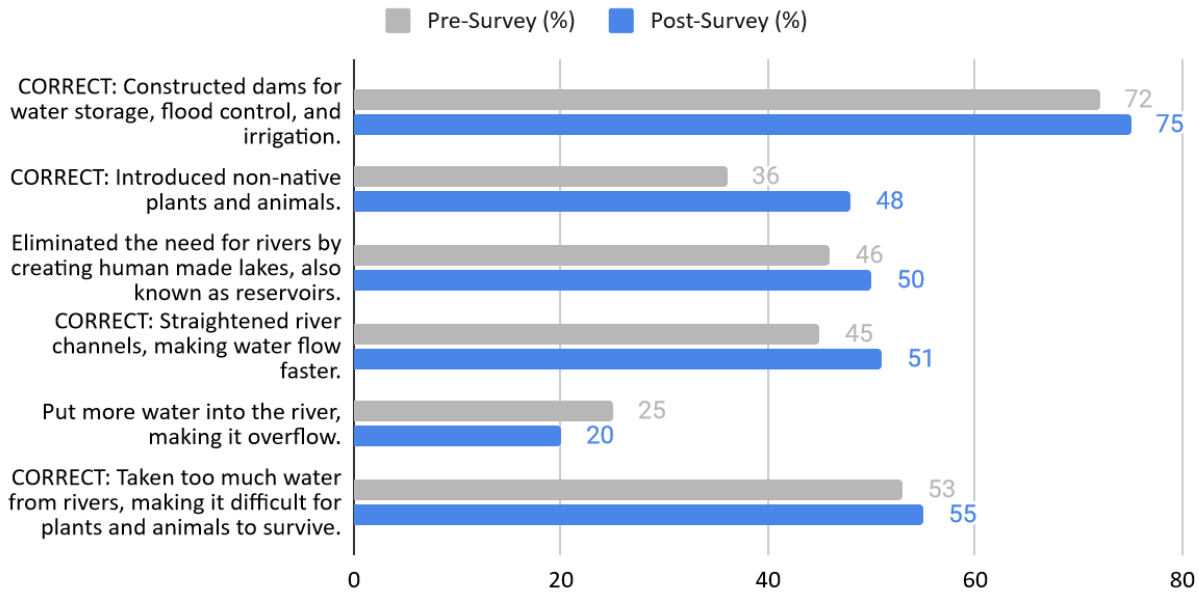
RX Farmers

Which of the following is NOT a method that farmers use to conserve water. (RX 2021)



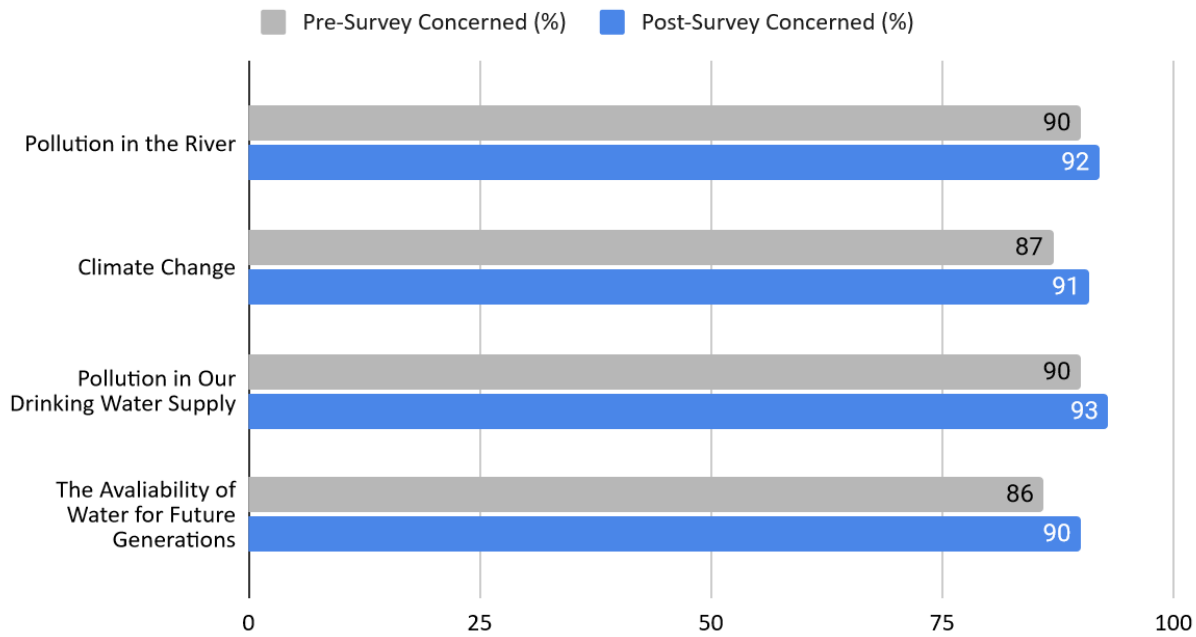
RX Ecosystem

What are some of the ways that humans have changed river ecosystems? Choose all answers that apply. (RX 2021)

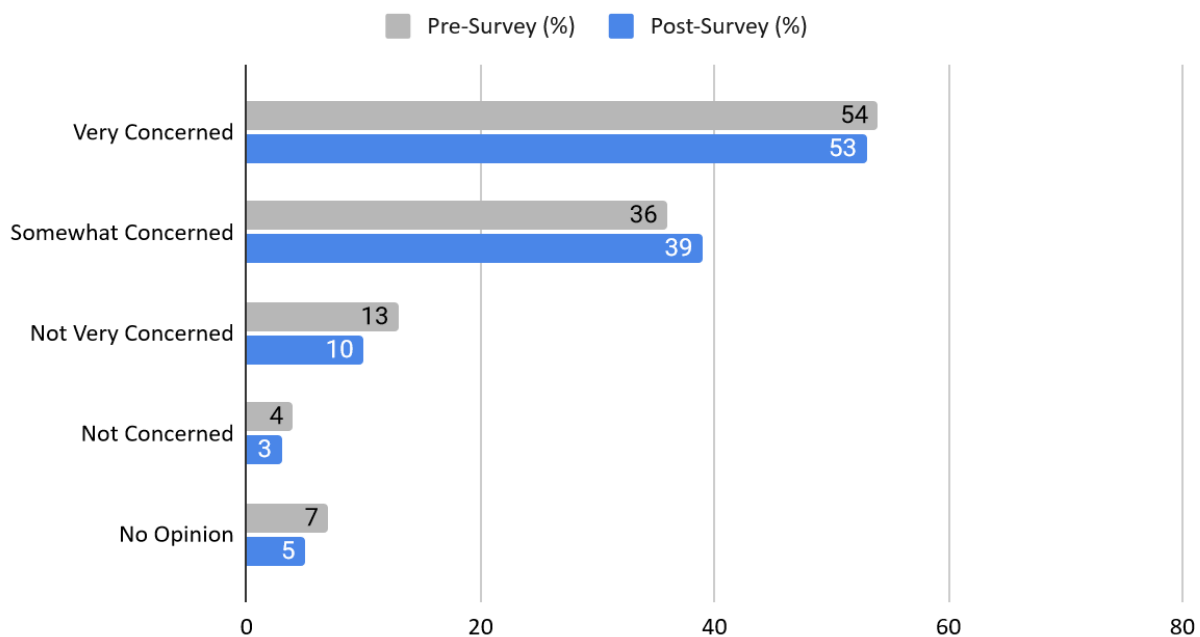


RX How Concerned

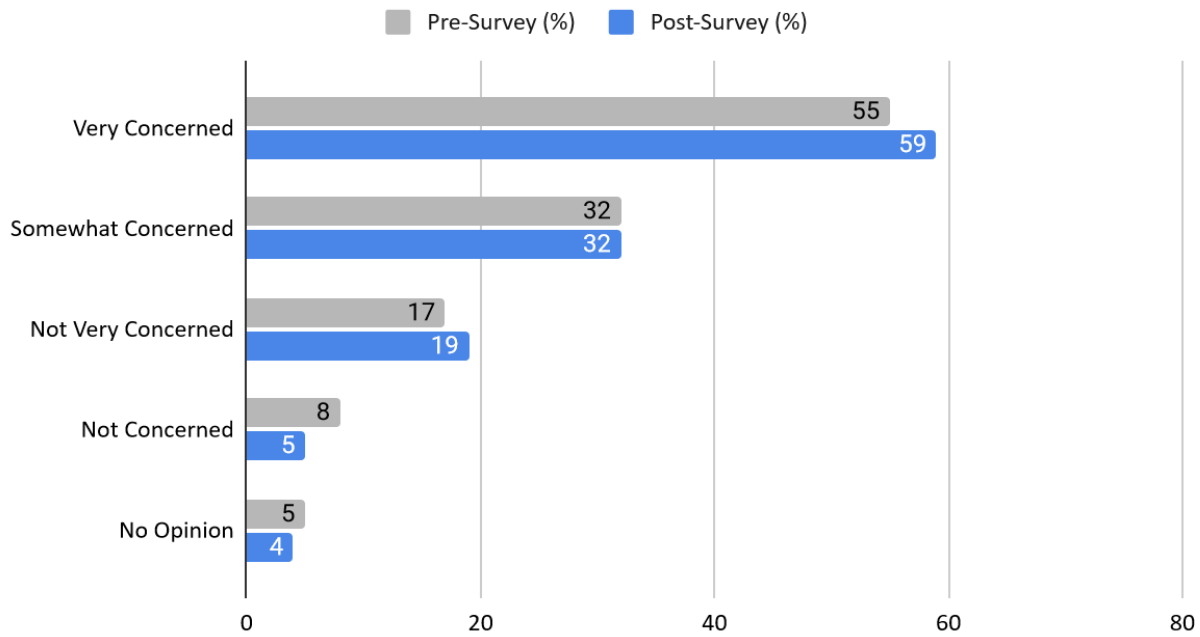
How concerned are you about the following: (RX 2021)



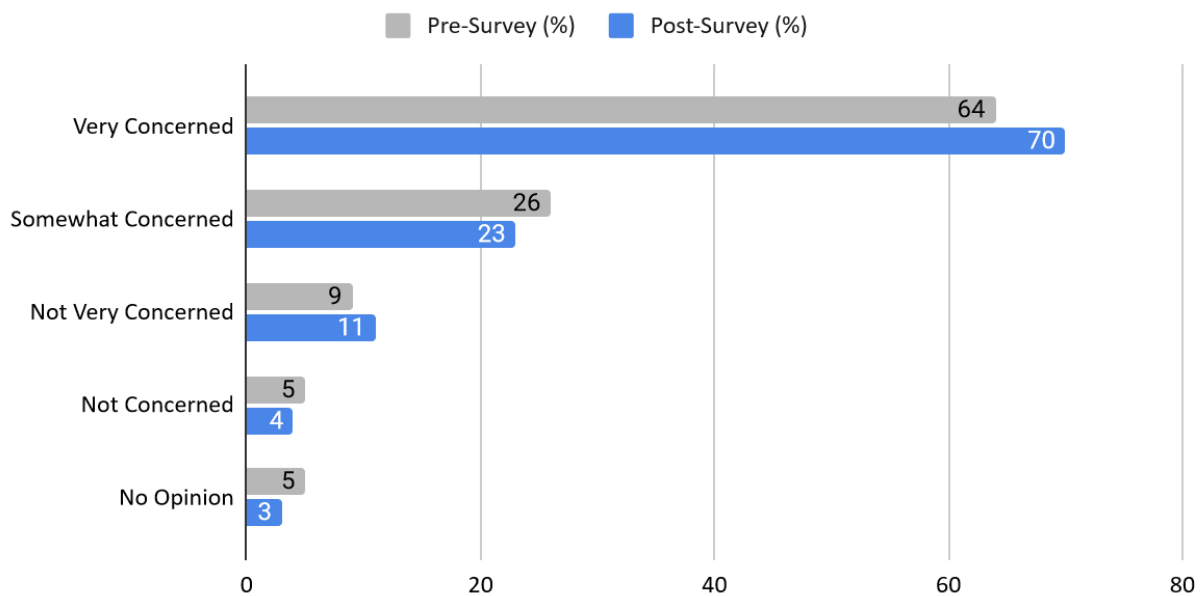
How concerned are you about pollution in the river?



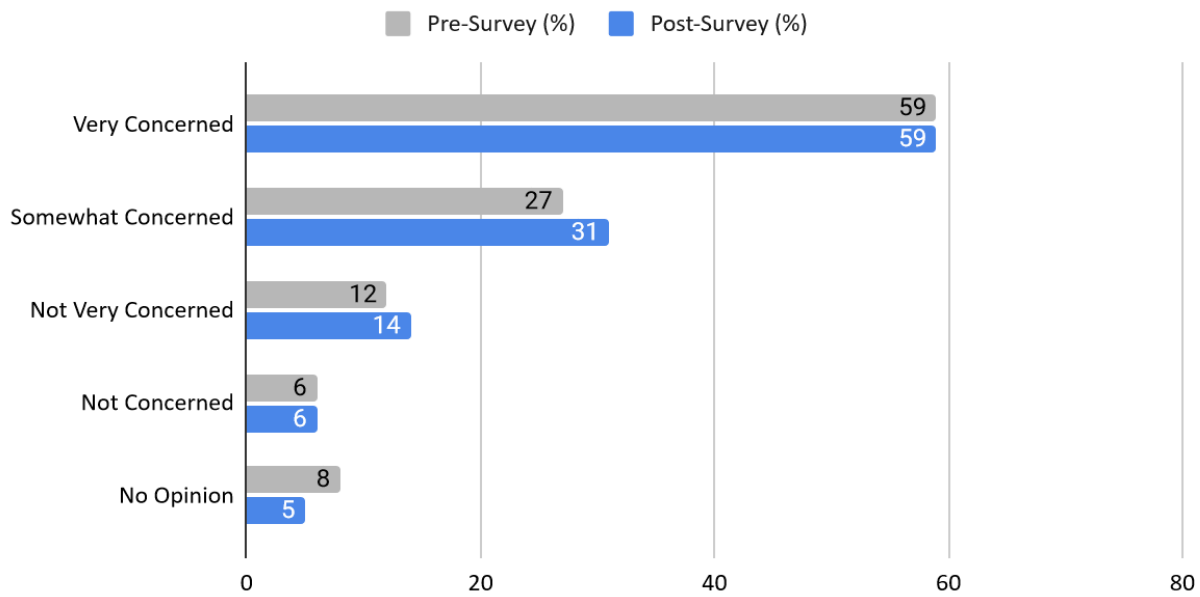
How concerned are you about climate change?



How concerned are you about pollution in our drinking water supply?

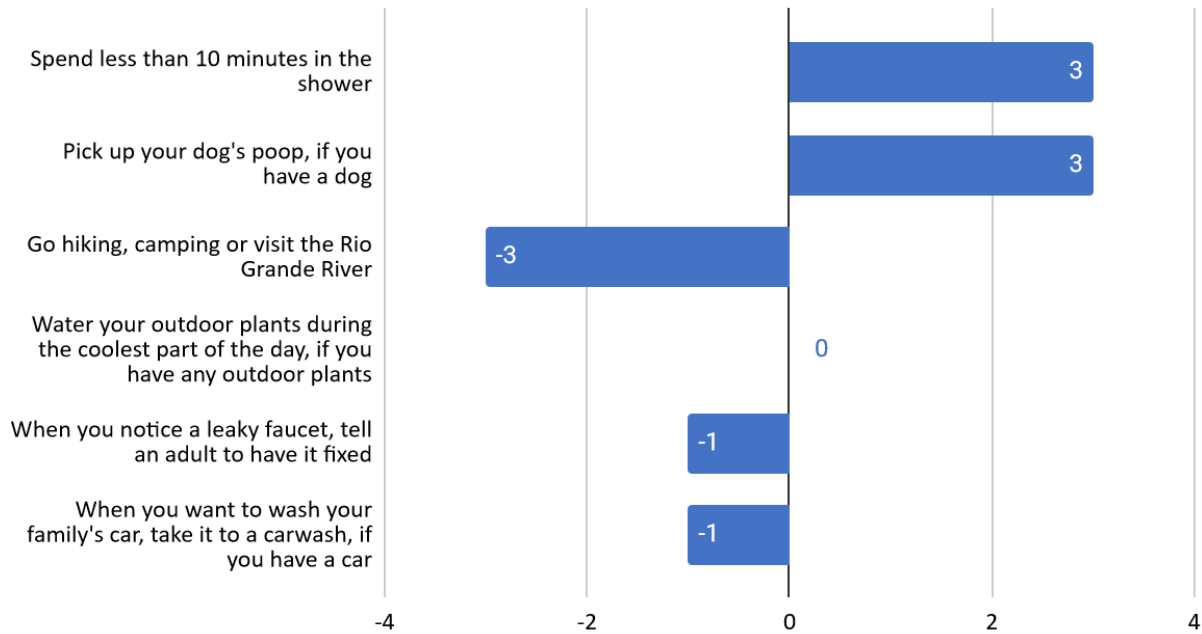


How concerned are you about the availability of water for future generations?

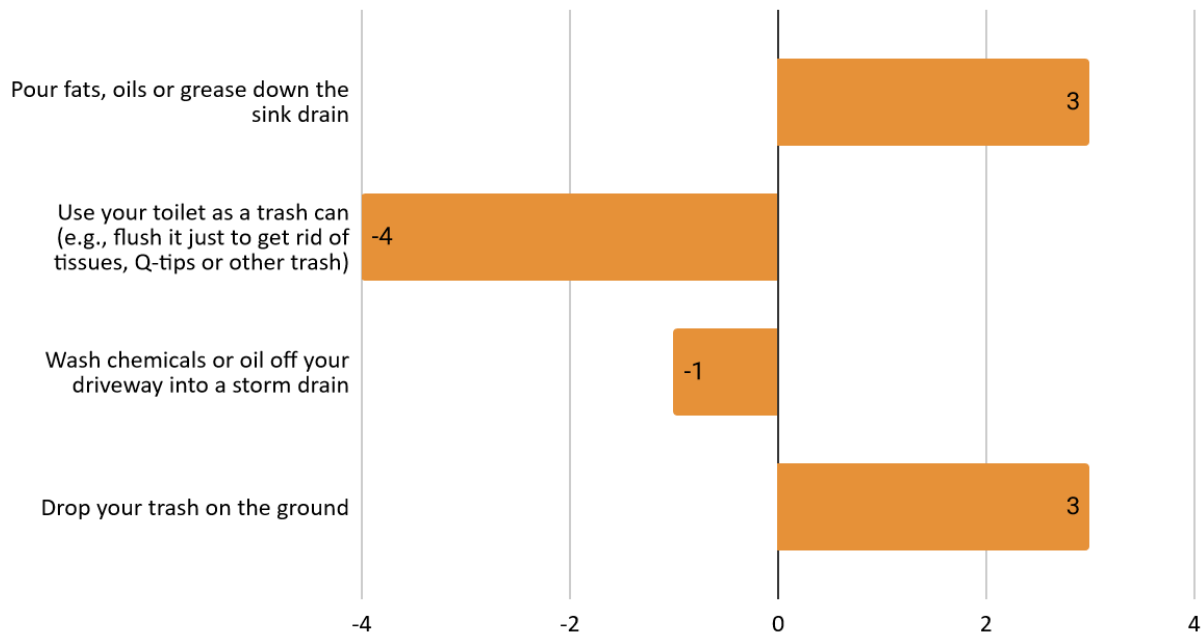


RX How Often

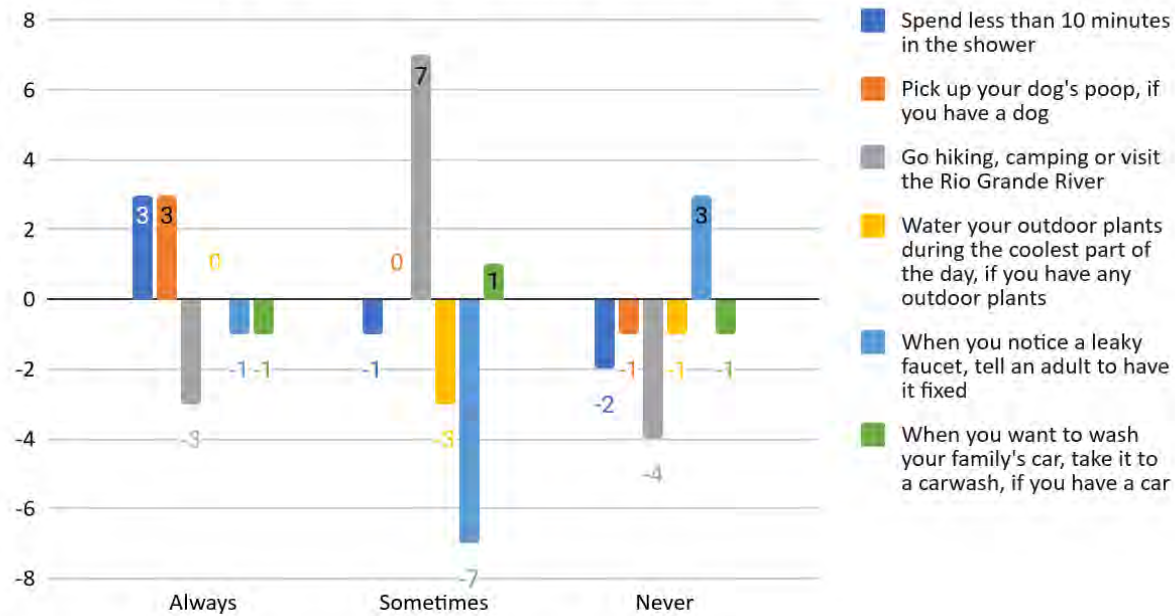
Change in Behavior of Students Who ALWAYS... (RX 2021)



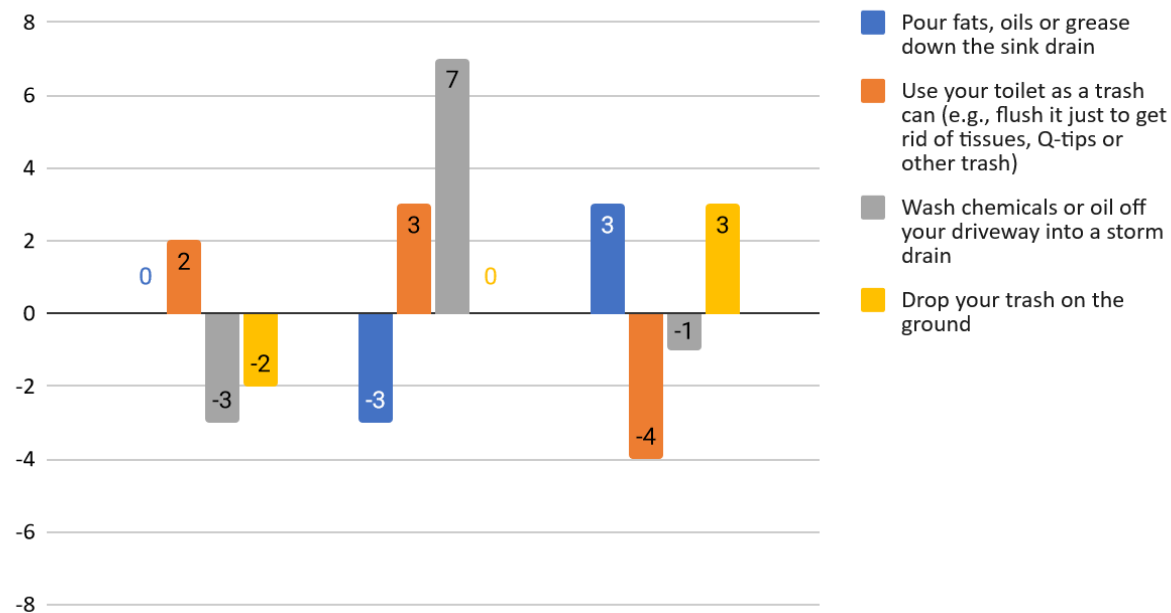
Change in Behavior of Students Who NEVER... (RX 2021)



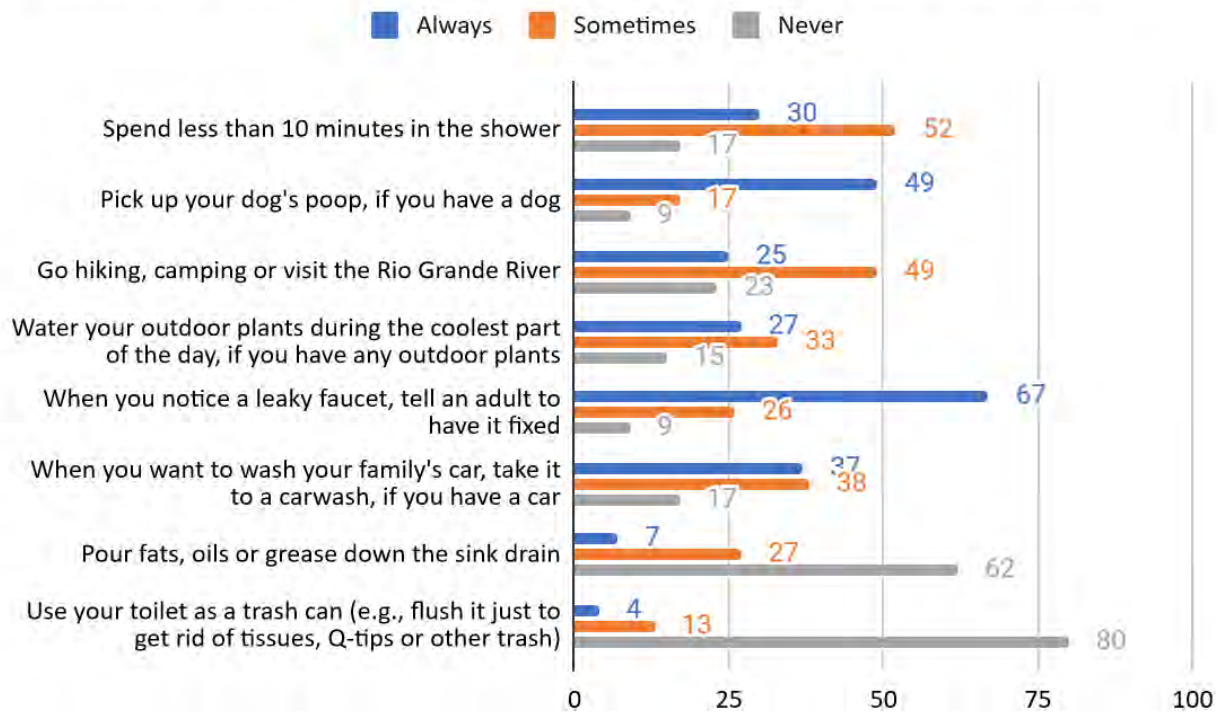
Percent Change for Positive Behavior Items - Pre to Post Test (RX 2021)



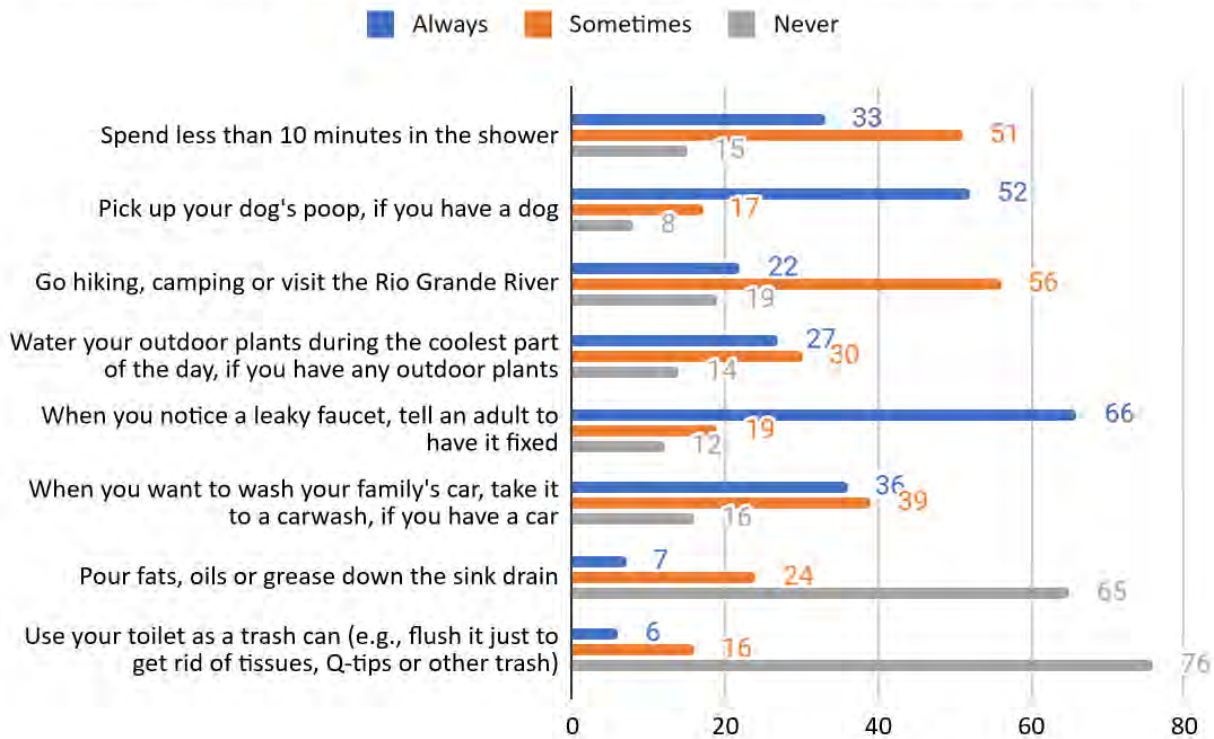
Percent Change for Negative Behavior Items - Pre to Post Test (RX 2021)



Pre-Test Percentages: How often do you or your family do the following things? Only answer for the items that apply to you.



Post-Test Percentages: How often do you or your family do the following things? Only answer for the items that apply to you.



RiverXchange Virtual Field Trip 2020-2021

1. What are we trying to teach students in this activity?

Essential questions:

- What is a floodplain and why is it important? (Rio Bravo)
- How has the Rio Grande floodplain been changed by humans? (Rio Manso)
- What efforts are being made to conserve the Rio Grande Floodplain? (Rio Nuevo)

2. How can we tie this activity to our teaching goals:

Learning Objectives	Methods
The riparian ecosystem of the Rio Grande is shaped by natural flooding.	Observation and finding evidence of: <ul style="list-style-type: none"> ● riparian habitat - plants and animals that depend on the ecosystem. ● the role of the Cottonwood tree as a keystone species and its dependence on flooding for its life cycle.
Human impacts have reduced or eliminated flooding.	Observation and finding evidence of: <ul style="list-style-type: none"> ● Human impacts ● Reduced flooding
Conservation efforts are now being made to rehabilitate and strengthen the riparian ecosystem	<ul style="list-style-type: none"> ● What monitoring methods can be used to determine the health of the ecosystem? ● What is being done to restore this ecosystem?

3. How can we tie this activity to standards?

Using the NGSS framework to explore **Phenomena** and support **Claims** based on **Evidence** and **Reasoning**.

Performance Expectations	DCIs
5-LS2-1 Develop a model to describe the movement of matter among plants, animals, decomposers and the environment	LS2.A Interdependent Relationships in Ecosystems
5-ESS2-1 Develop a model using an example to describe ways in which the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	ESS2.A Earth Materials and Systems ESS2.C The Roles of Water in Earth's Surface Processes
5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to	ESS3.C Human Impacts on Earth Systems

protect the Earth's resources and environment	
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4. How should this lesson be organized?

I. Opening Activity: “I notice, I wonder, It reminds me of”

- A. This activity is meant to engage students' observational and thinking skills - to turn on their “nature” brains!
- ❖ Let students know you will describe the activity first and then bring the camera to focus on a smaller, up-close frame of our object to be observed.
 - ❖ Walk students through each prompt. Describe how these prompts relate to the scientific method (observation, questioning, hypothesis)
 - I notice (the foundation of an observation): shape, size, texture, color, location, etc. These are simply what we see, without labeling their function or what we assume is the function.) Ex: “I notice a long, thin shaped object that is bumpy, brown colored with small lines on it.”
 - I wonder (the foundation of questioning): Take any statement that we think applies to our object and turn it into a question. “I wonder if something was eating this object that caused the lines? I wonder if this is a plant? I wonder if it is alive? I wonder if it is dormant?”
 - It reminds me of: (the foundation of a hypothesis): Making connections to what we already know or can remember helps us make an educated guess to answer our questions. For the purpose of this exercise, we are simply practicing making connections. “It reminds me of a spiral. It reminds me of the colors of sunsets in Albuquerque.”
 - Complete the activity, prompting and modeling as you go.

II. Rio Bravo

A. Discussion

Students will have watched the Rio Bravo video and hopefully did the drawing alongside the video. RX teachers reference video and now ask:

- ❖ What are characteristics of the Rio Bravo that you remember from that video? Do you have a drawing of it to remind you? What evidence of a floodplain can we find and share with the porcupines?

Objectives/Prompts

- How was the river shaped? (Meander)
- How were different ages of trees dispersed? (Mosaic pattern – they won’t answer this exactly)
- What is a floodplain? Where is it? (Low lying area near the river that can flood)

- What is a riparian ecosystem (floodplain)? Who lives here, who did live here and doesn't anymore? (Name specific plant and animal species)

B. Activity- What evidence can we find of the Rio Bravo and ecosystem in the floodplain? (A floodplain is a riparian ecosystem so what we are looking for is evidence of a variety of plants and animals that depend on the river).

Activity (focus on 2 plants - cottonwood and willow - and 2 animals - porcupine and great horned owl):

- Here is a video explanation (you can easily speed it up with to 1.5x or more to make it go a little fast, I just wanted to talk through the whole thing)
<https://www.loom.com/share/75ae70d4c19e4b8da54ac9d67a9a7d4f>
- Prepare students: Students have a printout of the plant and animal cards and cut them out so they can vote when you “discover” something new in the bosque. For those who don't have a printer, they can write the names on a sheet of paper and hold them up.
- Open with - “Get your plant and animal cards out or grab a piece of paper and a pencil. We're going to see what we can discover outside in the bosque today!”
- The Activity:
 - Plant #1 - Coyote Willow (walk around and “see” your first plant)
 - “Look at this plant! Wow, it's everywhere here in the bosque. It's here... over here... and even over there! (point camera.) Let's get a closer look. It has long skinny leaves and smooth bark on the branches.
 - What do you think it is? Vote with your card or write the name on a paper and hold it up.
 - You're right! It's a coyote willow! The way you can tell is that it's a shrub that always grows next to water, it's short, and it has long skinny leaves. It's one of the most common shrubs around water (riparian ecosystems) in New Mexico. Beavers LOVE to eat its branches, but it's also eaten by porcupines, deer, and rabbits.
 - Animal #1 - Porcupine (find porcupine scat under cottonwood)
 - Walk around and stumble upon porcupine scat.
 - “Hey, look what we have here! We found some scat, which is just a fancy biology word for poop from wild animals. ____ describe scat here _____. It's located right in the middle of the trail. That's weird. I wonder what animal it came from. Can you help me out?”
 - What do you think it is? Vote with your card or write the name on a paper and hold it up.
 - “You're right! It's porcupine scat! The way you can tell is _____, plus it's located right underneath a branch of a big tree, which is where porcupines spend most of their time - in trees! Porcupines are really cool animals because they have sharp, barbed quills that protect them from predators. When you see them in movies, a lot of times they ‘shoot’ their quills out of their body. But that's not true. Porcupines can't shoot

quills. They just get stuck in predators when they try to eat them. And once they're stuck in a predator, it's really hard to get them out. It's like getting a barbed fish hook stuck under your skin."

- Plant #2 - Cottonwood (look up after finding porcupine scat)
 - "If the porcupine is living and eating this tree, we should probably know what it is. Let's look at the leaves and see if we can figure it out. The leaves aren't on the tree right now because it's winter, so let's find one on the ground. (get leaf). Okay, here it is - it has a heart-shaped (or triangular shaped) leaf with a flat stem that's also called a petiole. And if I look around, I see them everywhere in the Bosque. I can even see them on the other side of the river! (Span the bosque then point camera to other side of river.)"
 - "What do you think it is? Vote with your card or write the name on a paper and hold it up."
 - "You're right! It's a cottonwood. And not just any cottonwood, but a Rio Grande cottonwood. These trees are a very important species in the Bosque. They provide food for many animals, like the porcupine, beaver, deer, rabbits, and insects. Birds eat the insects that feed on the cottonwood. PLUS, many animals use them for their homes! Porcupines sleep in them, and so do great horned owls. Birds make their nest in them. Squirrels live in them. They are a very important part of a healthy bosque ecosystem. And the way you identify them is by looking for their heart shaped leaves."
- Animal #2 - Great Horned Owl (find owl pellets under cottonwood)
 - "Let's look for another clue. What other signs of life can we find in the bosque?"
 - "Look at this! (show owl pellets below a large tree branch.) What do you think these are? They kind of look like scat. They're oval shaped and furry and kind of gross."
 - "What do you think it is? Vote with your card or write the name on a paper and hold it up."
 - You're right! They are owl pellets. Great horned owl pellets to be exact! Great horned owls are amazing predators. During the day, they spend their time perched in the tree - their brown feathers make it hard to see them. At night, they look for prey like mice, squirrels, rabbits, herons, ducks, and even other raptors like red-tailed hawks. Their quite feathers help them sneak up on prey in the dark of night. And they are amazing predators and can eat prey that's 2-3 times larger than they are! They can even hunt and kill porcupines, which is saying something! Getting past those sharp quills takes some serious skill! The cool thing about owls is that they spit up owl pellets. Owls often eat their prey whole, which means their digestive system has to deal with bones, fur, and feathers. And I don't know about you, but swallowing sharp bones seems like a bad idea to me because it might puncture something. To deal with this, their gizzards (which is like a second stomach) have developed an adaptation to separate the soft tissues, like muscles and organs, from the hard tissues like bone and fur. These hard tissues are formed into a ball by the gizzard then passed back up. It's basically like

vomiting a small hairy mass a few hours after every meal. Which is pretty gross and pretty awesome, all at the same time. (You might consider showing a quick clip of an owl regurgitating a pellet - here is a good one, just put it on mute:

<https://youtu.be/waLiTmLr1nM>)

- Close with - “What does this remind you of? We talked about coyote willow and cottonwood trees which both provide food for porcupines. Then we talked about how porcupines could be a food source for great horned owls. (Give students a second to respond.) That’s right! A food chain! Sometimes food chains can be very short like this one, and sometimes they can be longer with more animals.
- So, when you go with your family to the bosque, I want you to look for these 4 things - the rio grande cottonwood tree, the coyote willow shrub, porcupine scat, and great horned owl pellets.

C. Conclusion- what **CLAIM** will students make to the porcupines about the Rio Bravo? What **evidence** and **reasoning** do they have for this claim?

Ex: We observed animal tracks from Sandhill cranes on the sandbar and saw them from a distance. Cranes are a migrating species so they must know that they can come to this area for their needs. This evidence allows us to reason that there are animals that use this area for habitat – food, shelter and water. We also found cottonwood seedlings on the sandbar by the water. We can reason that cottonwood trees are trying to regenerate here.

We didn’t find a variety of ages in Cottonwood trees in large numbers. We can reason that the ecosystem is a riparian ecosystem, but that is different from how it used to be during the time of the Rio Bravo.

III. Rio Manso (Tame or Managed River)

A. Discussion

Referencing the second video (Rio Manso) they watched, RX teachers now ask:

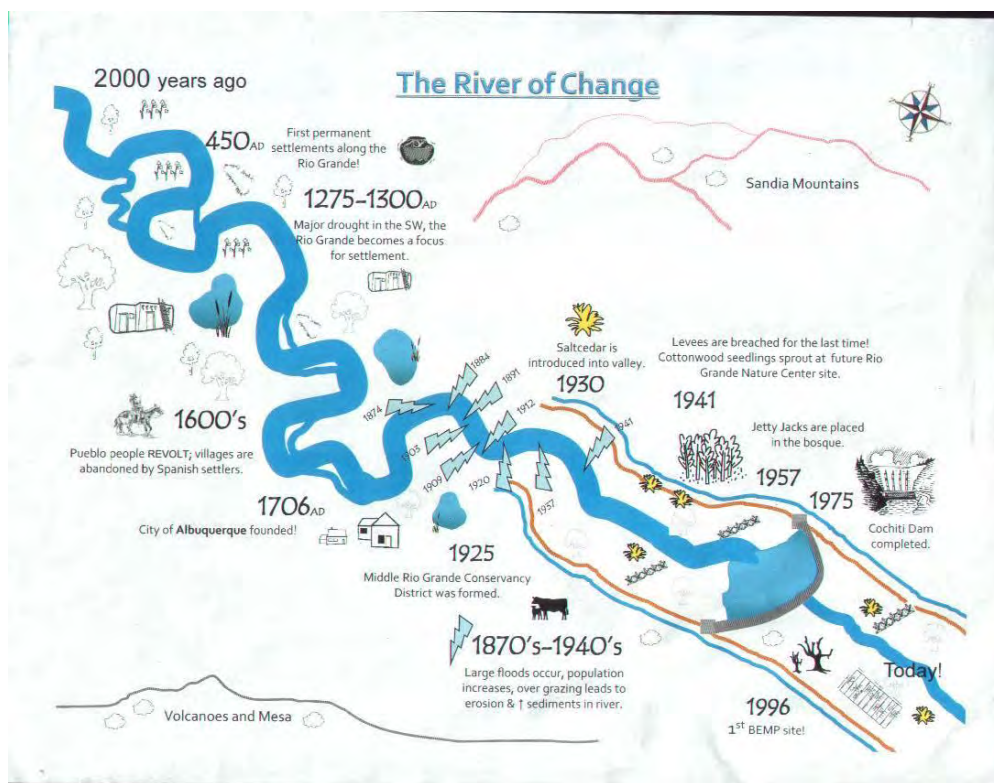
- ❖ What are characteristics of the Rio Manso that you remember from that video? (Do you have a drawing of it to remind you?) What happened as the human population grew and people were living in the floodplain? How did humans use science and engineering to protect their homes from the river?
- ❖ What evidence can we find of human impact and what claim can we make about this impact? (pausing between questions for discussion)

Objectives/Prompts:

- Identifying human impacts and how efforts to control the river (dams, jetty jacks and levees, pollution) impact the riparian ecosystem
- River of Change - Rio Manso “tamed”

- Changes were made to the river system with the top priority being how the river was serving human society, while minimal attention was given to the ecosystem or organisms living in the Middle Rio Grande.
- VIEW THE RIVER OF CHANGE MODEL

“ it took cultures, generations, a century of regulations, and management practices to get where we are today, the managed river.”



B. Activity - What flood control strategies were used along the Middle Rio Grande?

- [Rio Manso Jeopardy](#) - A game that will keep students engaged and on their toes by facilitating learning and surveying the knowledge absorbed from RX presentations and other program videos.
 - Jeopardy Roles - Facilitators/ Students
 - ◆ Game Show Host (aka Alex Trebek)/ Chat/ Answer Moderator - Facilitator 1
 - Host on video, reading questions
 - interacting with Jeopardy board
 - Manage chat to look for the correct answer.
 - Camera management
 - Assist with question prompts
 - ◆ Jeopardy Participants - Students
 - Input correct answer into chat

- Student who answers correctly first can select the next category/ amount for the next question.

- Jeopardy Categories (and clues below)

- ◆ **Settlement of the River Valley**

- Question / Answer 200 example - Settlers cut these down to build their homes.
 - What are trees?
 - Question/ Answer example - Due to drought in the late 13th century, Puebloans in New Mexico abandoned places without permeate water, to find a place with reliable water, and settled here.
 - Where is the Rio Grande Valley?
 - Question/ Answer example - Settling in the river valley ensures water for the settlers but causes problems because of this.
 - What is flooding?
 - Question/ Answer example - The population of the valley increased and Spanish settlers built these ditches to irrigate their agriculture fields.
 - What are acequias?

- ◆ **Flood Control Efforts**

- Question/ Answer example - Designed to decrease erosion and protect the berms from being washed away by the river, these were added to the bosque, while a piece of it is shown here-****camera on site**** cut camera to view the jetty jack stuck in the tree.
 - What is a Jetty Jack?
 - Question / Answer example - To prevent flooding of homes, these were built parallel to the river.
 - What are levees?
 - Question/ Answer 800 example - This final measure to control flooding was built to control the flow of the Rio Grande in the 1970s.
 - What is the Cochiti Dam?
 - Question/ Answer example - Define Reservoir ??

- ◆ **Impacts on Species**

- Question/ Answer example - Settlers brought these new exotic plants and animals to the Middle Rio Grande that took over existing species.

- What is an invasive species?
- Questions/ Answer example - To grow, seeds must land on bare, moist soil and because of flood prevention practices this species is having a hard time reproducing naturally.
 - What is the cottonwood tree?
 - Discussion - **camera on site** point camera across the river. Ask students what they notice about the cottonwood trees in the frame. (all trees are large and mature) Explain that cottonwood trees survive 80 to 100 years. The levee was breached for the last time in 1941 and that many of the trees in view (near Rio Grande Nature Center) sprouted during the flood year of 1941. This makes these cottonwood trees 80 years old! The cottonwood forest is at risk due to flood control interventions in our Middle Rio Grande!
- Question/ Answer 800 example - This species, who likes slow moving water, was put on the endangered species list in the 1990s..
 - What is a silvery minnow?
- Question/ Answer example - Native species lost this due to population growth and development of land and agriculture in the Middle Rio Grande Valley.
 - What is habitat?

◆ Impacts on the Riparian Ecosystem

- Question/ Answer example- In the early 20th century, overgrazing by cattle and sheep in the valley took place and few plants were left, so during heavy rains this filled and polluted river channels.
 - What is soil/ sediment?
 - Use jar filled with dirt and water to demonstrate turbidity/sediment pollution.
- Question/ Answer example - The river previously meandered and curved through the valley, but the construction of levees did this to the river.
 - What is straightened or narrows the river?
- Question/ Answer examples - Due to changes in the river, the majority of these wet habitats have been lost in the river valley.
 - What are wetlands and/or marshes?

- Question/ Answer examples - Define riparian zone?
 - Discuss benefits of riparian vegetation and natural filtration

C Discussion- Claim = Evidence and Reasoning.

Ex. Claim - Humans have made an impact on the natural riparian ecosystem.

Evidence - What have humans done to the Rio Grande ecosystem?

Reasoning - How has this impacted the river and riparian ecosystem?

PART 3. Rio Nuevo (Future of the River)

A. Discussion

Review prior activities - we've looked for evidence of a riparian ecosystem, we've cited ways that humans have impacted this ecosystem with flood control strategies (jetty jacks, levees, dams) and why this was done (to protect property).

Objectives/Prompts:

- ❖ What impacts do flood control strategies have on the ecosystem?
- ❖ Why do you think it is important for us to monitor the Bosque?
- ❖ What might we want to monitor for?
- ❖ What are some monitoring techniques we can use as students?
- ❖ What are some ways we can help to protect and/or restore the riparian ecosystem?

B. Activity - What is the state of the cottonwood forest or Bosque? What are ways to monitor it?

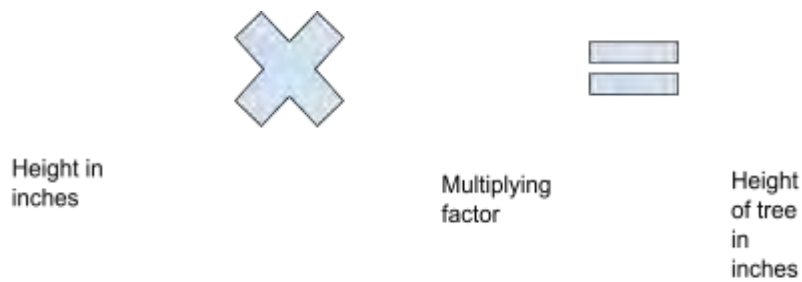
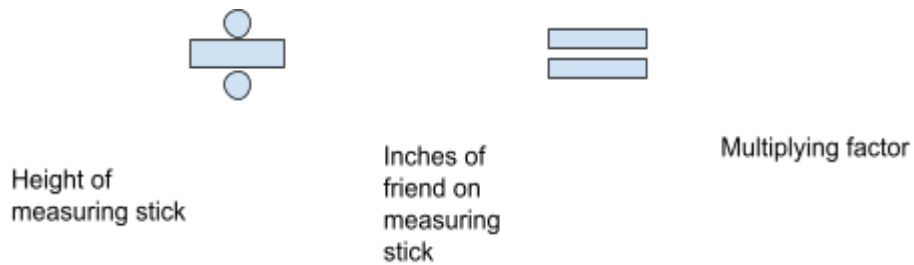
- Direct teaching on Cottonwood IDing - leaf shape, life cycle components and needs (i.e. catkins, cottonwood seeds pods/ wet sandy soil sun)
- Tree Measure Activity:
 - Tools - yardstick, friend, calculator

Simple Tree Measuring

- Line up a ruler or a yard stick with the height of the tree.
- Have a friend stand at the base of the tree.
- Measure how many inches your friend is on the ruler.
- Find the multiplying factor:

Divide the height of the ruler by inches your friend measured on the ruler.

- Multiply your friends height in inches by the multiplying factor.



C. Discussion - What are ways we can help protect or restore our riparian ecosystem?

Appendix B



MY WATERSHED JOURNAL

Engaging, *hands-on activities* where students learn about their local watershed.

Hello Students & Families!

Congratulations on being selected to participate in RiverXchange!

RiverXchange is a 5th grade science program where you will learn a lot about your local river, the Rio Grande, and your precious water supply. Additionally, you will learn about how to protect these local waters and keep them clean for all (like your family, local farmers, wildlife, and native plants) who depend on them. The journal in your hands will compliment the RiverXchange presentations you will receive with your class and includes at-home science lab activities that will help you understand the importance of good water quality and watershed health.

What is a **watershed**, you ask? A watershed is an area of land that drains to the same body of water. For example, you live in the ***Middle Rio Grande Watershed***, an area of land that expands from the Westside to the Sandias and includes any land that drains water in that area to the Rio Grande. Don't worry if that doesn't make total sense yet - it will eventually! What is important to know now is that *everyone lives in a watershed*. So just as it is important to know what state, city and neighborhood you live in, it is also important to know your watershed *and how to keep it healthy*, since everyone who lives there depends on the ability to have access to enough clean water to live.

In this journal, you will get to learn some of the science behind how a watershed works - and how it can be impacted by pollution. The activities in this journal do require a few materials to complete the labs, but should be something you already have at home or can collect outdoors. We recommend that you work on finding these materials right away so that you are ready for each lab in your journal. Please see the list on the next page for all the materials you will need and read each lab's instructions before collecting the materials so you understand what they are for.

The most critical and exciting part of this journal is that it encourages you to get outside and explore important watershed features. We think that as a RiverXchange participant it is important that you and your family take the time to visit a local water feature and that's why we've written it into the journal. Please note that one activity requires you to collect still-water (not river water) and you might find this close to your home. Additionally, we strongly encourage you to take a trip to the river to make observations and experience the amazing Bosque ecosystem. The best way to get to know your ecosystem is to explore it!

Finally, above all, we want you to be safe taking part in these activities at home. Remember to *always check with an adult* before you go outside to observe or collect anything and please note any safety precautions for each lab. For additional information on this journal and **a list of water collection sites and river access points around the city** please visit www.riverxchange.com/waterlabs2021.

We hope you have a great year!

Sincerely,

The RiverXchange Team

Table of Contents

• Your Watershed Journal Map.....	4
• How to Use Your Nature Journaling Sheets	5
• Activity #1: Where does my stormwater go?	6
• Activity #2: How does nature filter our stormwater?	8
• Activity #3: How does energy flow in my ecosphere?.....	10
• Activity #4: How can stormwater affect my ecosystems?	12
• Activity #5: Field Experience: Visit a local lake or river!	14
• RiverXchange Presentations	16
• Stormwater Presentation.....	17
• Drinking Water Presentation.....	18
• Waste Water Presentation	20
• Agriculture & Water Presentation & Activity	22
• Virtual River Presentation.....	24
• Like PRIZES? Post on the RiverXchange Blog!	26
• Glossary of Terms	27
• MAP—The Rio Grande Watershed	31

List of Supplies

- Students will need pencils and colored pencils each activity.
- For the Stormwater Activity you'll need:
 - . Your watershed journal
 - . An adult to go outside with you
- For the Water Filtration Activity you'll need:
 - ☐ 1 plastic bottle
 - ☐ 1/2 cup cotton balls
 - ☐ 1/2 cup large pebbles
 - ☐ 1/2 cup small pebbles
 - ☐ 1/2 cup sand
 - ☐ 1/2 cup leaf or plant matter
 - ☐ 1 cup of dirty water
 - ☐ 1 empty clear cup
- For the Ecosphere Activity you'll need:
 - ☐ 3 labeled glass or plastic jars with air tight lids
 - ☐ Water, soil, and algae from a still water source

Draw Yourself Here!

Hello, my name is:

and I live in the

watershed.

- For the Pollution Activity you'll need:
 - ☐ 3 labeled ecospheres from previous activity
 - ☐ Household chemicals that can pollute water (fertilizer, soap, vinegar, etc.)
- For the Field Experience you'll need:
 - ☐ Water, snacks, backpack, journal, etc.
 - ☐ An adult to go with you

The Watershed Journal Map

STORMWATER

Where does my stormwater go?
First, let's make a map of where stormwater flows when it rains at our houses or apartment building.



WATER FILTRATION

How does nature filter our stormwater?
Next, let's discover how the rocks, soil, and ecosystem help filter our stormwater before it gets to local water sources.



ECOSPHERES

How does energy flow in my ecosphere?
Now, let's learn about aquatic ecosystems and how energy flows from one organism to the next. The water in these ecosystems is fed by stormwater!



POLLUTION

How can stormwater affect my ecosystem?
Next, let's see how common household items can pollute and harm our river ecosystem. These pollutants are transferred from our houses to local water sources through stormwater—remember the map you drew in the first activity!



FIELD TRIP

Finally, let's visit a local water source so we can see why it's so important to learn about how stormwater affects our aquatic ecosystems.

How to Use Your Journaling Sheets

Each activity includes a journaling sheet (like the one below) where you can record your observations and thoughts. We are using the 3 prompts—claim, evidence, reasoning—from the Next Generation Science Standards. Please read each section below as it will guide you on how to complete the journaling sheet for each activity.

CLAIM

At the top of each activity page, there is a question. Read the page, think about what it says, then try to answer the question.

Ask yourself “What do I know?”

You can use these prompts to guide your **CLAIMS**:

- *What have you observed about this topic?*
- *What have you learned before about this topic?*
- *Who could you ask about this topic?*

EVIDENCE

This is where you will collect evidence to answer the question. Don't worry, you don't have to come up with this on your own. Simply read the activity page and follow the instructions. Then record your observations in this box.

Ask yourself, “How do I know it?”

You can use these prompts to guide your **EVIDENCE**:

- *Can you draw a picture or model of your claim to better explain it?*
- *Can you do an experiment or make an observation that will support your claim?*
- *Can you ask an expert or find information from a valid source to support your claim?*

Example Evidence for:
“Where does my
stormwater go?”



REASONING

Reasoning is your explanation of why the evidence you used supports your claim. Be sure to include scientific terms & concepts provided in the terms list for each activity.

Ask yourself, “How does the evidence support my claim?”

You can use these sentence stems to guide your **REASONING**:

- _____ supports my claim because _____.
- *The evidence shows that* _____.
- *This evidence works together to build a case that* _____ because _____.

Where does my stormwater go?

Did you know that you live in a watershed? It's true! We all do. A **watershed** is an area of land where all the water drains into the same river, lake, or ocean.

We can learn a lot about our watershed during a storm. Think about the last time it rained. Where did the stormwater go? The path stormwater takes from our houses and cities until it ends up in a body of water, helps us understand our watershed. **Stormwater** is defined as the rainwater that runs off the land and city surfaces into street gutters, drains, or arroyos.

For this activity, we'd like to discover the path of stormwater at your house or apartment. Be sure to ask a parent for permission to go outside!

Terms to Know:

- Watershed
- Stormwater
- Permeable Surface
- Non-Permeable Surface

Supplies:

- Pencil
- Colored pencils

INSTRUCTIONS:

1

Go outside and walk around your house or apartment building. Think about the last time it rained and imagine where the stormwater might have flowed. Hint: look for signs of water stains, water damage, or little water canals formed in the soil.

2

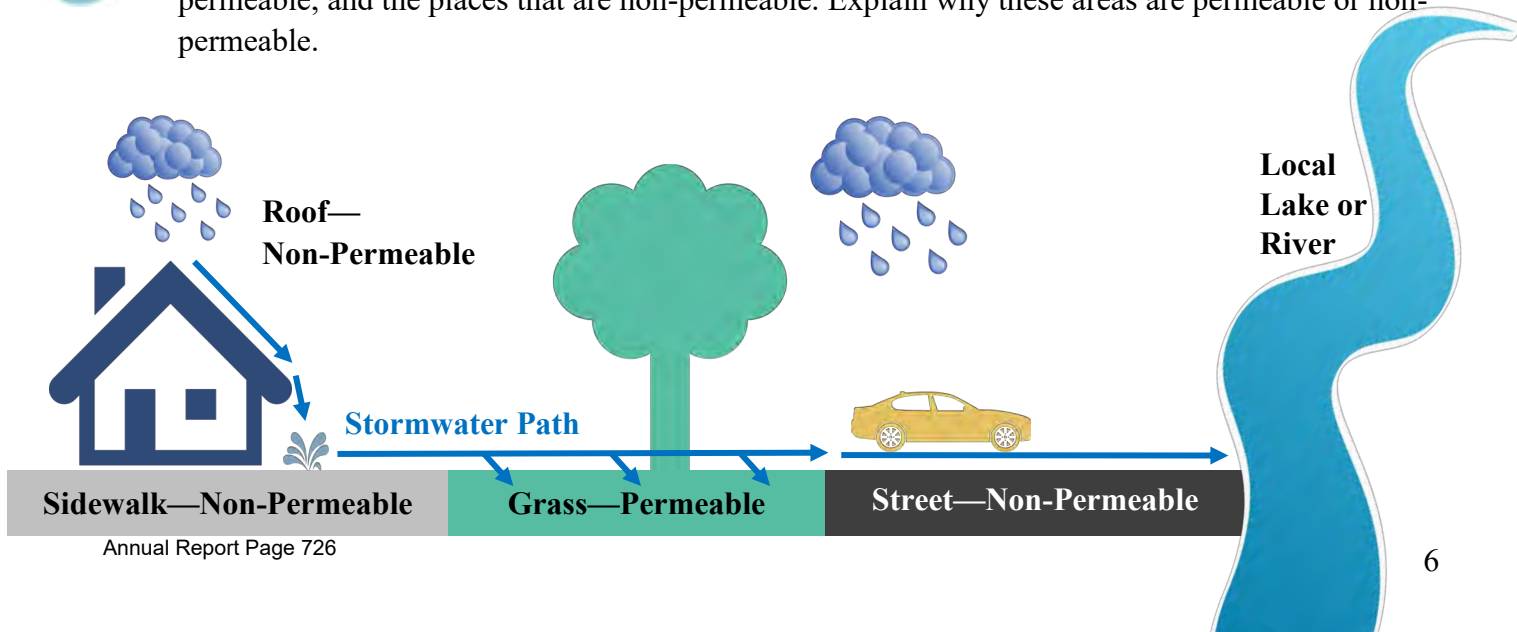
Draw a map of your house or apartment building. Label everything on your map—your house, the big tree, the sidewalk, a gravel path, a garden, and so on. Be sure to use color to draw the features on your map!

3

Now, discuss the flow of stormwater at your house or apartment with a parent, sibling, or friend. Where does stormwater go? Why do you think it flows that direction? Does the water soak into the ground in some areas and not others? Using a blue marker or colored pencil, draw the path of stormwater on your map.

4

Permeable surfaces are areas where water can seep into the ground, for example, areas with grass, soil, and gravel. **Non-permeable surfaces** are areas where water is not able to seep into the ground, for example, sidewalks, pavement, and asphalt. Label the places in your map that are permeable, and the places that are non-permeable. Explain why these areas are permeable or non-permeable.



CLAIM

Use your observations to answer the following question in a complete sentence: *"Where does my stormwater go?"*

EVIDENCE

Draw a map of your area & label all its features (building, grass, concrete, asphalt, etc.). Label which features are permeable and non-permeable. Draw a blue arrow to represent the path that stormwater takes on your map.

REASONING

Use scientific terms & concepts to explain why your evidence supports or refutes your claim. Be sure to use words from the "Terms to Know" Box.

How does nature filter our stormwater?

Did you know that soil is the world's largest water filter? It's how nature keeps our freshwater clean and usable! Even though 71% of our Earth is covered in water, only 2.5% of it is **freshwater**—water that is found in local lakes and rivers, and is not salty. Because there is so little freshwater, it's vital that we keep it clean!

Freshwater is naturally filtered by traveling across the land in rivers or percolating down into the earth towards an aquifer. An **aquifer** is an underground body of rock or sediment that serves as a reservoir for groundwater.

The more our water is polluted, the harder it is to clean naturally. For example, when it rains where you live, stormwater travels across pavement picking up pollutants before it flows into local lakes or rivers. Let's learn about how our soil filters water by making our own filters!

INSTRUCTIONS:



First, collect your supplies. Find a plastic drinking bottle and cotton balls, then go outside and collect the materials needed to make your filter—rocks of different sizes, sand, and plant matter. You should be able to find these materials in your yard or a nearby empty lot. Remember, the soil around Albuquerque is mostly sand! If you want to upgrade this project, use a 2 liter bottle and 1-2 cups of each filter material.



Now, have some fun making dirty water! Just add dirt to a cup of water. If you want to simulate stormwater from the city, you can also add a small amount of oil or small pieces of trash.



Now create your filter! Cut the bottom off your plastic bottle. Turn the bottle upside down and place the cotton balls in the mouth-part of the bottle (see picture below). Use a spare piece of paper to plan out your filter and where you want to place each layer of rock, sand, and plant matter. Now build it!



Once you have finished layering your filter materials, place the empty clear cup under your filter. Now pour the dirty water into your filter. (Be sure to take the cap off first!) You may have to pour small amounts at a time. Compare the filtered water (that's passed through the filter) to the dirty water. How well did your filter clean the water? How could you redesign it to make it better? What would happen if you used only asphalt in your makeshift filter? Would it filter water like your soil filter? Test it out!

Terms to Know:

- Freshwater
- Water Filtration
- Aquifer

Supplies:

- 1 plastic bottle
- 1/2 cup cotton balls
- 1/2 cup large pebbles
- 1/2 cup small pebbles
- 1/2 cup sand
- 1/2 cup leaf or plant matter you find on the top of the ground
- 1 cup of dirty water
- 1 empty clear cup

HOW IT WORKS:

As water moves down through the soil, contaminants are removed by physical, chemical, and biological processes. This **water filtration** process is why groundwater tends to be cleaner than surface water found in rivers and lakes.



Parts of an Aquifer

Be sure to label the parts of your filter that represent a real aquifer! Aquifers include the large pebbles, small pebbles, sand, and the water filtering through.

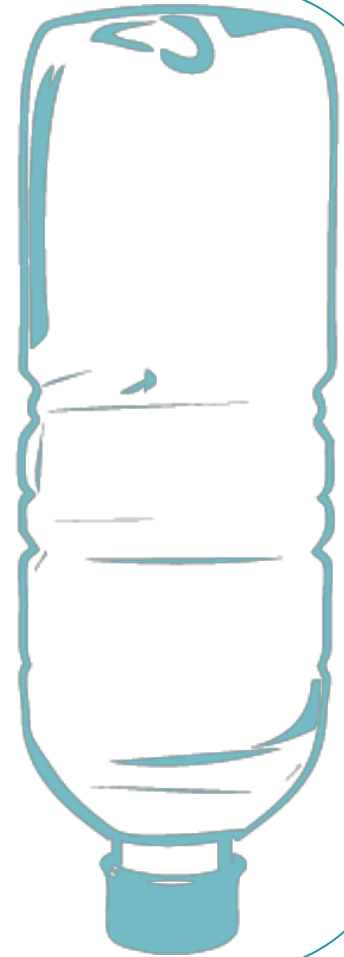
Be sure to remove the cap before trying to filter water!

CLAIM

Use your observations to answer the following question in a complete sentence: *“How does nature filter our stormwater?”*

EVIDENCE

Draw each layer of your filter and label them. How do you think each layer helps filter pollutants from stormwater? Remember, layers can remove pollutants physically, chemically, or biologically. Below, describe how your filtered water was different from your dirty water. Don't forget to label the parts of your filter that represent an aquifer!



REASONING

Use scientific terms & concepts to explain why your evidence supports or refutes your claim. Be sure to use words from the “Terms to Know” Box.

How does energy flow in my ecosphere?

A group of living organisms that live in a specific area and interact with each other, along with non-living factors in the environment, is called an ecosystem. **Aquatic ecosystems** are ecosystems that exist IN a body of water. Even though we read about these ecosystems in books, they're hard to observe first-hand because we can't always see underwater. But, guess what?! We can make our own mini aquatic ecosystems call ecospheres! **Ecospheres** are closed aquatic ecosystems that are self-sustaining. In other words, these ecosystems have all the energy and nutrients they need to survive indefinitely, as long as the right organisms are in balance! Stormwater from our houses feed local aquatic ecosystems—either keeping them healthy or harming them with pollutants. Let's investigate our aquatic ecosystem by making an ecosphere!

Terms to Know:

- Ecosphere
- Aquatic Ecosystem

INSTRUCTIONS:



Find 3 clear glass jars or plastic containers and label them #1, #2, and #3. You could collect plastic water bottles or used jars from neighbors! Go to an area with standing water. This could be a local pond, acequia, or a still section of a river. If you gather water from a fast-moving river, you will not get a good sample of organisms. Please see www.riverxchange.com/waterlabs2021 for ideas on sites to collect water samples.



Use your jars to scoop up water and soil from the water source. Each sample should be about *one-quarter soil, one-half water, and one-quarter air*. **You'll need a good amount of algae** in order to see organisms and ensure your ecosphere survives. If you catch a fish, put it back in the water. Ecospheres do not work with fish. Screw the lid on. Do this for all your jars.



Take your ecospheres home and let it settle for a few days. Be sure to place it in a spot that's sunny, but does not get direct sunlight. If it gets too hot, it will not survive. Once the soil has settled, observe your ecosphere daily for 7 days. At the same time each day, record the number of snails, shrimp, and nematodes (worms) you see in each jar. Some ecospheres can last for months! See how long yours lasts!



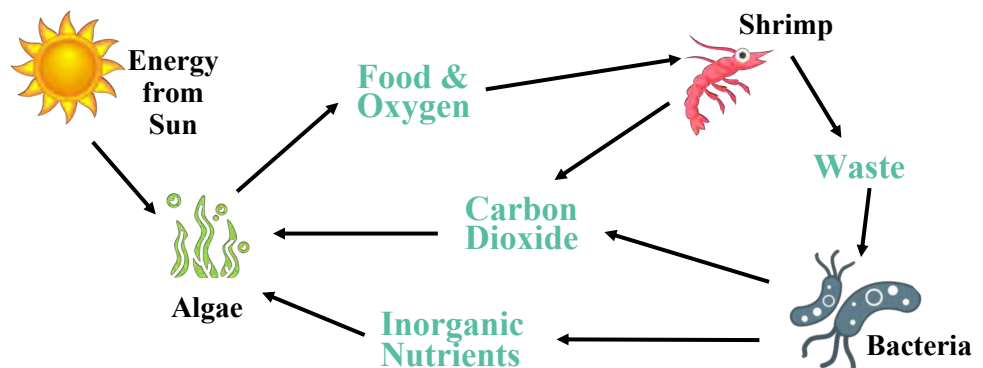
Draw a model that describes how energy flows from organism to organism in your ecosphere. Use the diagram below for help, but only include organisms that you know are in your ecosphere. If your ecosphere did not survive, think about what went wrong and design a new one! Test your new design and see if it works. (Be sure to keep your ecospheres for the next activity on pollution!)

HOW IT WORKS:

An ecosphere is a self-sustaining system because energy & nutrients are able to cycle through the ecosystem and sustain the needs of all organisms. Look at the model below to see how energy and nutrients flow through an ecosphere. (Use it as an example to draw your model!) Shrimp are not necessary to maintain a healthy ecosphere, but they're fun to watch!

Supplies:

- Pencil & colored pencils
- 3 labeled glass or plastic jars with air tight lids
- Water, soil, and algae from a still water source



CLAIM

Use your observations to answer the following question in a complete sentence: *“How does energy flow in my ecosphere?”*

EVIDENCE

At the same time each day, record the # of organisms you see in each ecosphere in the table below. You may see snails, shrimps, nematodes, and the like. To the right, draw a model of how energy flows in your ecosphere. Be sure to include what you can see (for example, algae) as well as what you can't see (bacteria). Use the model on the previous page for help.



Snail & Shrimp



Snail using its siphon to get air.



Nematodes

	Jar #1 –Organisms			Jar #2—Organisms			Jar #3—Organisms		
Day 1									
Day 2									
Day 3									
Day 4									
Day 5									
Day 6									
Day 7									

REASONING

Use scientific terms & concepts to explain why your evidence supports or refutes your claim. Be sure to use words from the “Terms to Know” Box.

How can stormwater affect my ecosystem?

When you think of pollution, what comes to mind? **Pollution** includes any kind of man-made waste that has a negative impact on the environment. When we talk about pollution, we often talk about harmful chemicals from factories that cause plants and animals to die. But did you know that common household items, like fertilizer, soaps, and dog poop, can also be considered pollution? They can!

Pollution comes in many forms. Some types of pollution have a direct negative affect on plants and animals—like adding acidic chemicals to an aquatic ecosystem. Many aquatic organisms are very sensitive to changes in pH (how acidic or basic the water is) and will not survive if the pH changes. Another direct impact is when dog poop enters an aquatic environment and adds harmful bacteria to the water. This can cause fish to die, create health issues for other aquatic animals, and cause humans to get sick. Yuck!

Other types of pollution have an indirect negative impact. Stormwater can carry nutrients, like phosphates and nitrates from fertilizers, from our houses or local farms into local water sources. The nutrients in the water feed algae and aquatic plants—giving them everything they need to grow. The problem is, they grow in excess and eventually cause the ecosystem to collapse. This type of pollution—an excess of nutrients that cause algae to grow in excess—is called **eutrophication**. (See below for details.) Let's take a look at how pollution affects our local aquatic ecosystems.

Terms to Know:

- Pollution
- Eutrophication

Supplies:

- Pencil & colored pencils
- 3 labeled ecospheres from previous activity
- “Pollution” from your house—fertilizer & vinegar

INSTRUCTIONS:



Use your 3 ecospheres from the previous activity. Label jar #1 “control, jar #2 “fertilizer” (you can use soap if the soap contains phosphates—look at the ingredient label) and jar #3 “vinegar” (or lemon juice if you don't have vinegar). Take a picture of each jar.



Put your control to the side—you're not going to add anything to it. This will be used to compare the changes that happen in the other two ecospheres. Add a PINCH of fertilizer to jar #2. (Be sure to ask an adult for help, fertilizer is poisonous! You can also use soap with phosphates.) This jar represents eutrophication. Add a splash of vinegar or lemon juice to jar #3. This represents what happens during acid rain or when our water sources become too acidic.



After your ecospheres have set for a week, take another picture. Compare those pictures to the pictures you took a week ago. Did any ecospheres change? If so, how did they change? Do the jars with pollutants have more or less algae than the control jar? Why do you think that is? Record your results on the next page. (In theory, your fertilizer jar should grow more algae and your vinegar/lemon juice jar should have less. If you haven't seen changes yet, add more fertilizer or vinegar and observe them for another week.)

HOW IT WORKS:



Stormwater washes pollutants from fields and houses into our rivers and lakes. These pollutants—fertilizers, soaps, dog poop, etc.—contain nutrients like nitrogen and phosphorus. This is the first step of eutrophication.



Nutrients cause algae to grow very quickly. These algal blooms block sunlight and kill aquatic plants. Eventually the algae dies too. Bacteria digest the dead plants and algae—taking up all the oxygen in the water.



Without oxygen in the water, many aquatic organisms die—including fish, plants, and insects. These unhealthy aquatic ecosystems negatively affect other plants & animals that rely on them for food and water.

CLAIM

Use your observations to answer the following question in a complete sentence: *“How do household chemicals affect my ecosystem?”*

EVIDENCE

In the table on the left, draw your samples before adding chemicals then 1 week after you added your chemicals. This model will show people how pollutants changed your ecospheres over time. Explain what happened below.

	Draw or describe your jar BEFORE adding pollutants.	Draw or describe your jar AFTER adding pollutants— 1 week later
Jar # 1 Control		
Jar #2 Eutrophication		
Jar #3 Acid Rain		

REASONING

Use scientific terms & concepts to explain why your evidence supports or refutes your claim. Be sure to use words from the “Terms to Know” Box.

FIELD EXPERIENCE: Visit a Local Water Source

Have you ever heard this saying?

*You love what you know.
You care for what you love.*

It means that you're more likely to care for something you love, and you only love things that you know.

Supplies:

- Water
- Snack
- Your Watershed Journal
- Pencil & Colored Pencils
- A Friend or Family!

Think about one of your closest friends. How did you first get to *KNOW* each other? Well, you told each other your names, right! Then over time you became great friends because you learned about each other—your interests, your personalities, your quirks. By learning about them over time, you developed a strong friendship—one of love and care for each other. You'd do anything for your closest friends!

The same is true for us and nature. We're only going to love and care for nature if we first get to *KNOW* nature. And the best way to get to know nature is to spend time with her! This week, plan a field experience to a local water source. Be sure to invite family and friends!



Mourning Cloak Butterfly

Nymphalis antiopa

INSTRUCTIONS:



Ask your parents to help you plan a morning or afternoon at a local lake or river. Set a date and time! Then ask your parents if you can bring a friend. Invite them to go with you!



Plan out everything you'll need for your field experience—food, water, your watershed journal, colored pencils, a backpack, and a fun activity while you're there. Ask your friend for help you plan your field experience.



Fill out the first parts of the journaling sheet on the next page. These are the logistics of your field experience.



On the day of your field experience, do the "I Notice, I Wonder, This Reminds Me Of" activity and fill in your journaling sheet. Take a picture of you and your friends or family on your field experience!

LOGISTICS

Logistics includes all the details that you need to plan BEFORE you go on your field experience. Ask a friend for help and be sure to get your plan approved by your parents!

Date of Field Experience: _____

Time: _____

Where You Plan To Go: _____

Snacks: _____

Amount of Water per Person: _____

Friends You Want to Invite: _____

Directions on How to Get There & Where to Park: _____

Describe a fun activity that you want to do while you're there: _____

Remember to pack sunscreen, insect repellent, binoculars, magnifying glass, a plastic container to observe insects, or anything else you might need while there!

I NOTICE...

Find one thing in nature that you want to observe a little more closely. In this box, write down everything you notice about that object or organism.

I WONDER...

As you were making observations, what questions or musings came to mind? Write them here.

THIS REMINDS ME OF...

Did your observations remind you of anything? Perhaps it was smell that reminded you of an experience from years ago. Maybe the color reminded you of a friend, or the shape reminded you of a special memento at home. Write your thoughts below.



PRESENTATIONS





Stormwater Presentation



What is an impermeable surface? List 3 examples of impermeable surfaces.

What is a permeable surface? List 3 examples of permeable surfaces.

What is stormwater? Is it cleaned before it travels to your local water source (for example, a lake or river)?

How important is stormwater in our communities?

How important are local water sources for our community?

What everyday actions can we take to keep local water sources clean?



The Rolling River traveling model teaches students about stormwater and local watersheds.





Drinking Water Presentation

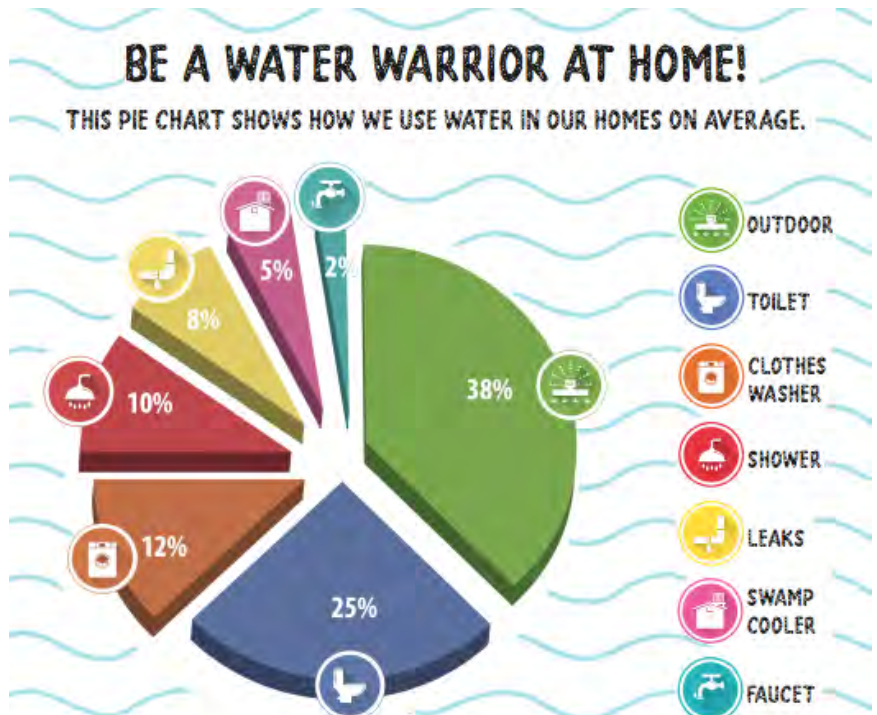


Where does your drinking water come from?

Where does the water go after I use it?

List 5 things you can do to save water at home.

1. _____
2. _____
3. _____
4. _____
5. _____



Graphic from ABCWUA

HOW MUCH WATER DO YOU USE IN A DAY?



FILL IN THE TABLE BELOW.

ACTIVITY	# OF TIMES PER DAY	MULTIPLY	# OF GALLONS USED
DRINKING WATER 1 CUP IS ABOUT 1/16 GALLON	----CUPS	X .0625	
TOILET FLUSHING ABOUT 3.5 GALLONS PER FLUSH	----FLUSHES	X 3.5	
BRUSHING TEETH (WATER RUNNING) ABOUT 3 GALLONS PER MINUTE	----MINUTES	X 3	
DISHWASHER 15 GALLONS PER LOAD	----LOADS	X 15	
LAUNDRY 40 GALLONS PER LOAD	----LOADS	X 40	
SHOWER = 2.5 GALLONS/MINUTE	----MINUTES	X 2.5	
FULL BATH = 40 GALLONS	----BATHS	X 40	
WATERING YARD WITH HOSE OR FULL SPRINKLERS = 300 GALLONS/HOUR	----HOURS	X 300	
TOTAL GALLONS			

I USED ----- GALLONS IN ONE DAY.

Graphic Adapted from ABCWUA

In both Albuquerque and Rio Rancho efforts have been made to reduce water consumption through public education programs and it has worked! Do a Google search with your parents to find these values.

How many gallons per day (GPD) on average did people use in the year 2000? _____

What is the average GPD per person in your city now? _____

How many gallons per flush and gallons per minute are used today for new toilets and shower heads? _____



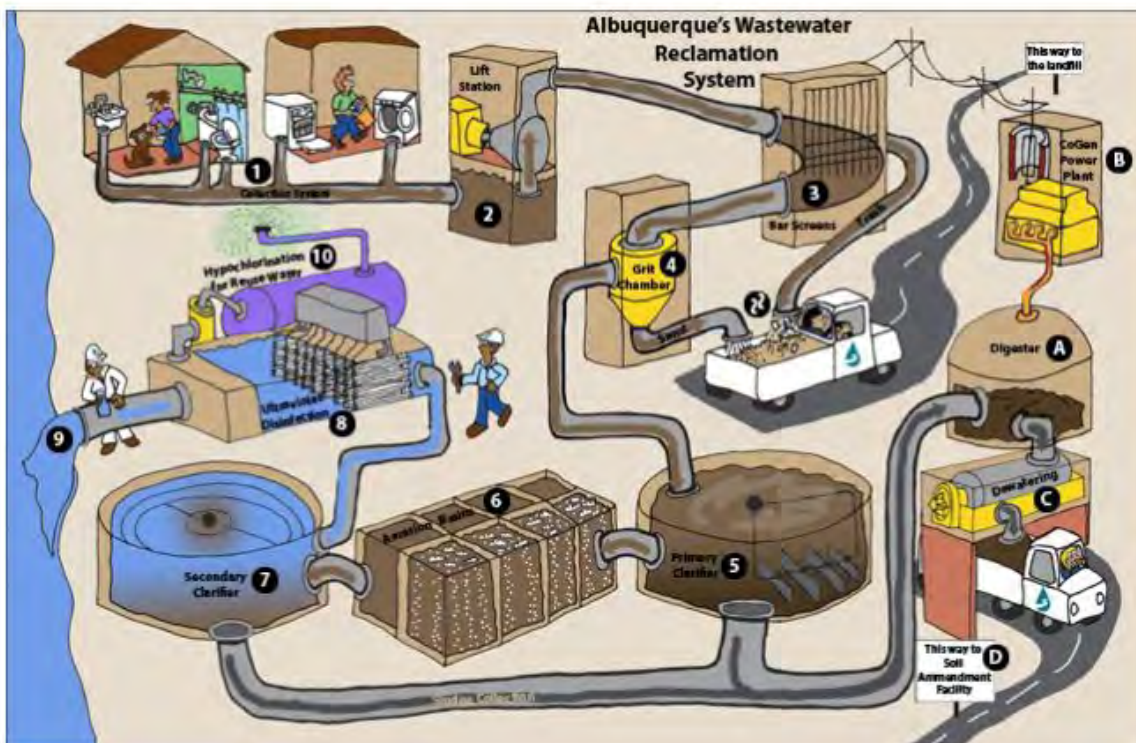
Wastewater Presentation



What is wastewater and where does it go? (For example, after you flush the toilet or do dishes in the sink.)

What kinds of things should never be put down a drain?

What is a water bear and what job do they do?

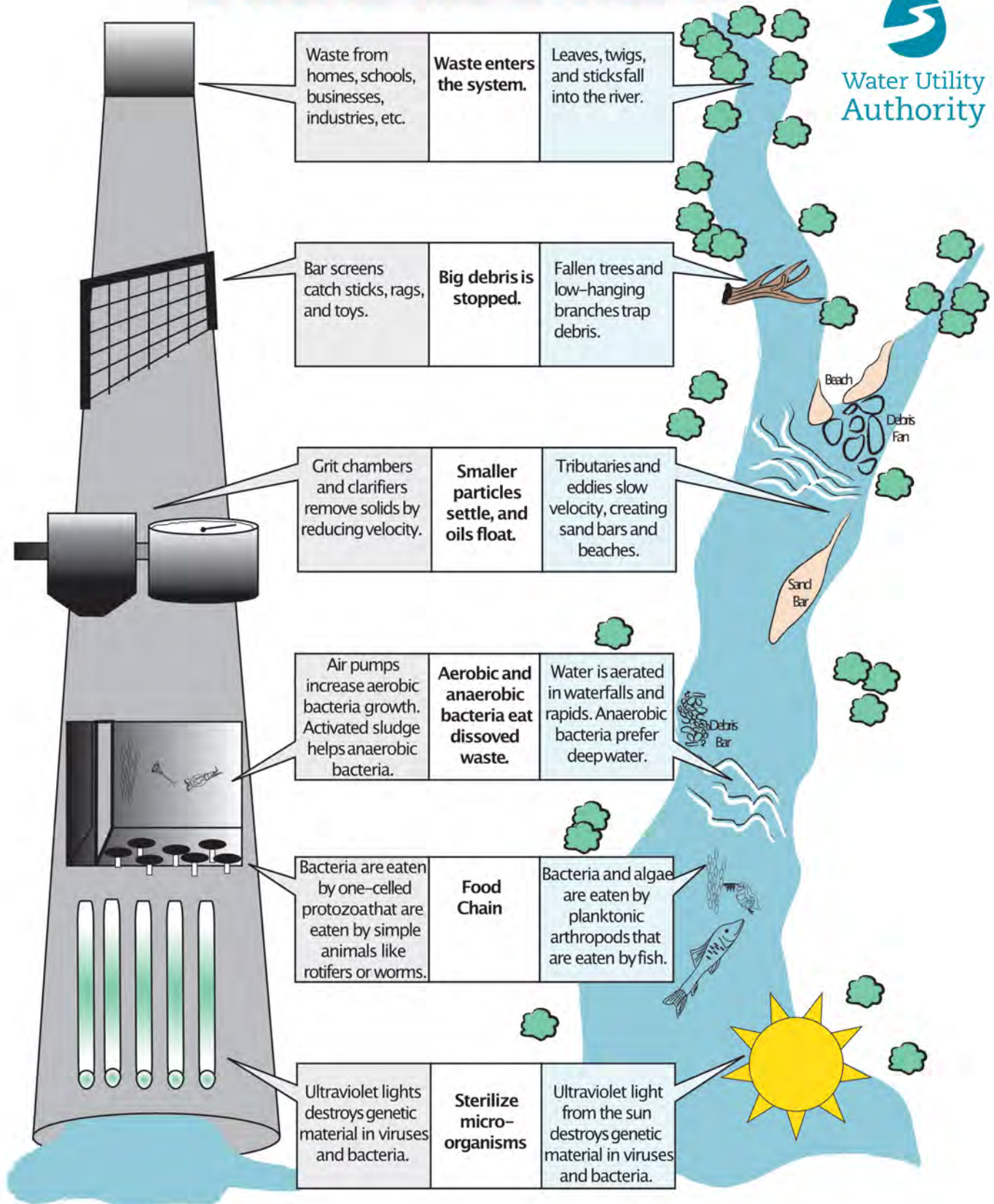


- A. Digester
 - B. CoGen Power Plant
 - C. Dewatering
-
- 1. Collection System
 - 2. Lift Station
 - 3. Bar Screens
 - 4. Grit Chamber
 - 5. Primary Clarifier
 - 6. Aeration Basins
 - 7. Secondary Clarifier
 - 8. Ultraviolet Disinfection
 - 9. Clean Water Returned to River
 - 10. Hypochlorination for Reuse Water

It works like a river ...



Water Utility
Authority





Agriculture & Water Presentation



What is agriculture and how important is it in your daily life?

What is irrigation and why do farmers use it?



What do farmers need to consider when growing food? What surprised you about what you learned?

Agriculture & Water Activity



Invitation to Build Create Your Own Irrigation System

Directions: Design **one** of the following three irrigation systems: flood, sprinkler, or drip using any material you have at home. Some suggestions include paper cups, straws, coke bottles, cardboard, foil, pool noodles, push pins, scissors, tape and/or glue. Use your irrigation system on plants you may have at home or around your neighborhood.

1. Which of the three irrigation systems did you choose to create?

2. Did you successfully transport water to a plant? Why or why not? What would you change or modify if anything?



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College of Agricultural, Consumer, Environmental Sciences
Sandoval County Cooperative Extension Service

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NMSU and the U.S. Department of Agriculture cooperating.



What is the Bosque? Why is there an effort to plant native trees there?

Cottonwood trees need clean stormwater to grow! Color and label the leaf, male branch, and female branch of this cottonwood tree.

What benefits do native trees provide humans, wildlife, and the river?

What's the difference between native and invasive species? List examples here.



Image by Project Gutenberg:

<https://www.gutenberg.org/files/52651/52651-h/52651-h.htm>

Did you know?

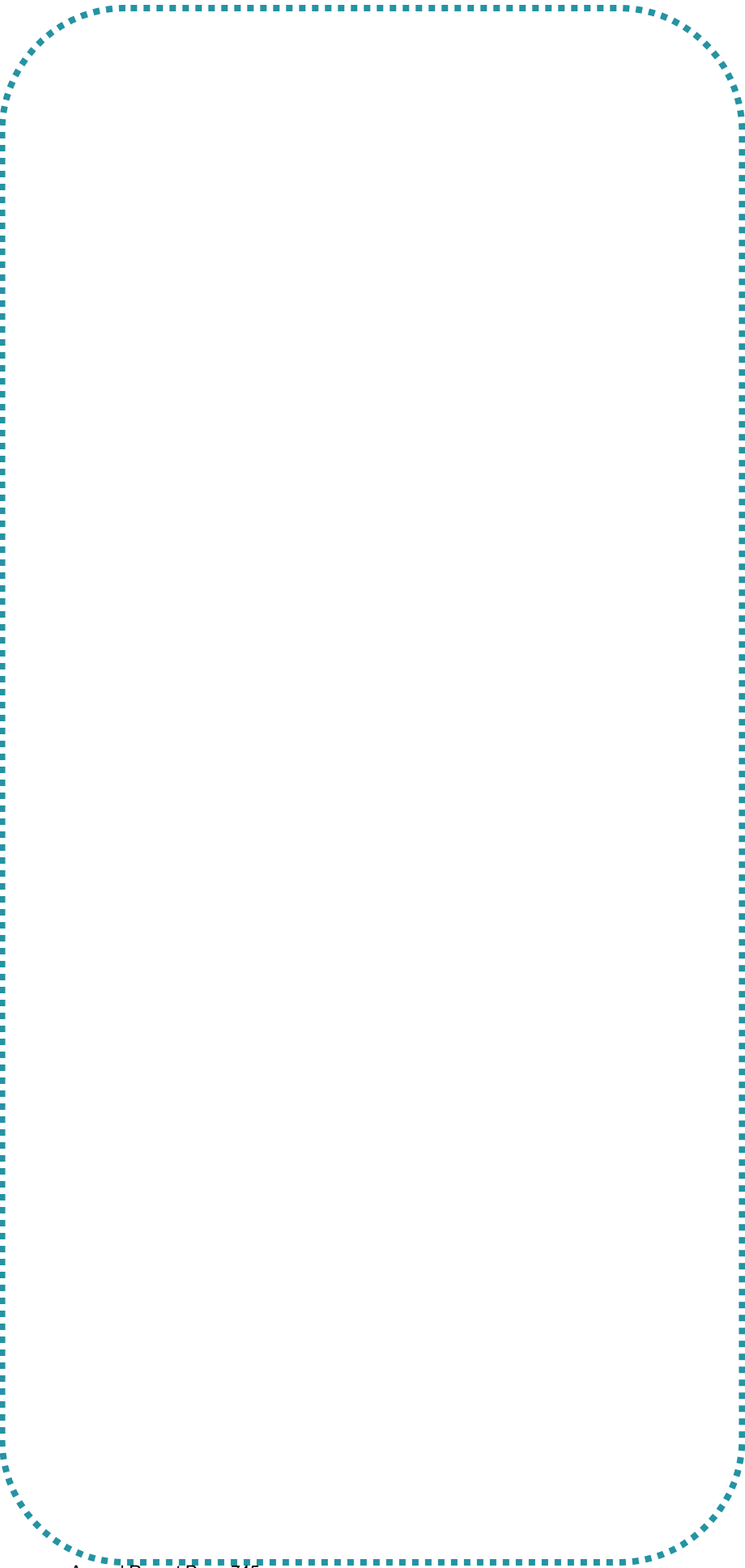
Rio Grande Cottonwoods (*Populus deltoides wislizenii*) are a native tree species found only along the Rio Grande River.

Cottonwoods grow well in areas where their roots can reach underground water and where their seeds can germinate on bare, moist soil. That's why you'll only see them growing in areas with direct access to water—they cannot survive if the water table is too deep. Plants that can tap their roots directly into groundwater are called phreatophytes.

Rio Grande cottonwoods have heart-shaped leaves and grey bark with thick furrows. Their size depends largely upon the amount of water that's available—their trunks can reach 2-5 feet in diameter and they can grow to 90 feet tall! They can live anywhere between 60-100 years old.

Rio Grande Cottonwoods are dioecious, meaning some individual trees are males and others are females. In the spring, male trees produce catkins which bear pollen that can be carried by the wind to female trees. The female trees have flowers in long, greenish clusters. After pollination, the female trees produce tiny seeds with cottony plumes that can be dispersed by wind or water. Seeds are produced in late spring/early summer which historically corresponds to when the river would flood its banks—before humans began regulating river flow.

Cottonwood forests once dominated the floodplains of the river, but have been cleared for farming, river control projects, and urban development. Because of human actions, our Rio Grande Cottonwood forests are threatened—affecting all the species that rely on this special and unique habitat.



Like PRIZES? Post on the



Blog!

As a RiverXchange participant, we want to hear your voice!

Throughout this journal, you have learned the importance of water conservation and watershed protection which is both about keeping water clean and making sure there is enough to go around. Water conservation is an important topic no matter where you live, because everyone lives in a watershed! What would you like to share with the world about what you've learned? What do you think is most important for people to know about water conservation and watersheds?

Use this area to draft your concept for a project you will complete that gets your message out. You could write a script for a public service announcement or video, a podcast, or play you will produce. You could write a story, poem, song, or even draw a cartoon. Get creative! And remember to post your final project on your RiverXchange class blog.

The RiverXchange Team will review your post and choose 3 winners for the most creative and informative projects. Prizes will be announced to your teachers.

Brainstorm your ideas here:

Glossary

Important Watershed Terms

- **Arroyo:** A Spanish word for a drainage ditch, gully or ravine which was carved by water drainage.
- **Continental Divide:** A drainage divide on a continent (in the U.S., the Rocky Mountains) such that the drainage basin on one side of the divide feeds into one ocean or sea, and the basin on the other side either feeds into a different ocean or sea.
- **Conserve:** To use something wisely; not wasting.
- **Delta:** The mouth of a river (so named because it is triangle-shaped like the Greek capital letter Delta).
- **Desert:** A region that receives less than 10" of precipitation per year.
- **Ecosystem services:** any positive benefit that wildlife or ecosystems provide to people. There are four types of ecosystem services: provisioning, regulating, cultural and supporting.
- **Erosion:** The process in which a material (such as a river bank) is worn away by water or air, often due to the presence of abrasive particles in the stream.
- **Flash flood:** A rapid flooding (less than six hours) of low-lying areas (such as washes, rivers, dry lakes, basins), caused by heavy rain, snow or sudden icemelt in surrounding areas.
- **Floodplain:** Land that may be submerged by flood waters, or a plain built up by materials deposited by a river.
- **Headwaters:** The source of a river (where it starts).
- **Riparian area:** The area around the banks of a natural body of fresh water, where the vegetation and landscape is directly influenced by that water.
- **Snowpack:** The amount of snow that accumulates annually in a mountainous area.
- **Surface water:** Water collected on the ground or in a waterbody such as a stream, river, lake, wetland or ocean.
- **Tributary:** A creek, stream, or river which feeds a larger stream or river or a lake.
- **Virtual Water:** all of the water consumption necessary for an agricultural or industrial production, or a service. In other words, this corresponds to the total quantity of water needed to produce something. The term 'virtual water' is used because the water consumed is generally not found in the finished products.
- **Wetland:** An area such as a marsh or swamp that is covered with shallow water or where the soil is naturally water soaked.
- **Xeriscape:** The use of low water use plants in landscape (not "zeroscape".) Xeros is Greek for "dry."



The Bosque provides food, water, and shelter for important migrating species like the Sandhill Crane.

Glossary

Stormwater Terms

- **Condensation:** The process by which water changes from vapor to liquid (water in clouds condenses to form rain).
- **Evaporation:** The process by which water changes from liquid to vapor (water in a puddle, river, lake, ocean, or other body of water evaporates into the air).
- **First flush:** The first surface runoff of a rainstorm. This is when we see the highest levels of pollution in water entering the storm drains.
- **Infiltration:** The process of water sinking down into the ground to refill the aquifer. Also called percolation.
- **Nonpoint-source pollution:** Water pollution coming from a wide land area, not from one specific location. Occurs when rainwater, snowmelt, or irrigation runs off plowed fields, city streets, or suburban backyards, picking up soil particles and pollutants, such as nutrients, pesticides, and other chemicals.
- **Point-source pollution:** Water pollution coming from a single point, such as a sewage-outflow pipe or a factory.
- **Precipitation:** All the water that falls from the sky, in solid or liquid form, such as rain, snow or hail.
- **Runoff:** The rain or snow that does NOT sink into the ground, that runs off the land into a river, lake or other body of water (often carrying dirt and pollution with it).
- **Stormwater:** Runoff from a storm which either flows directly into a water body or is channeled into storm drains, which eventually discharge to surface waters.
- **Storm drain:** A drain, often under sidewalks, designed to collect excess rain and ground water from impermeable surfaces such as streets, parking lots, sidewalks, and roofs. Also known as a storm sewer.
- **Transpiration:** The process by which water comes out of the leaves of plants, primarily through openings in the leaves, and goes into the air.
- **Watershed:** The land area from which snowmelt and rain drain into a river, lake or other body of water. Also known as a drainage basin or catchment.

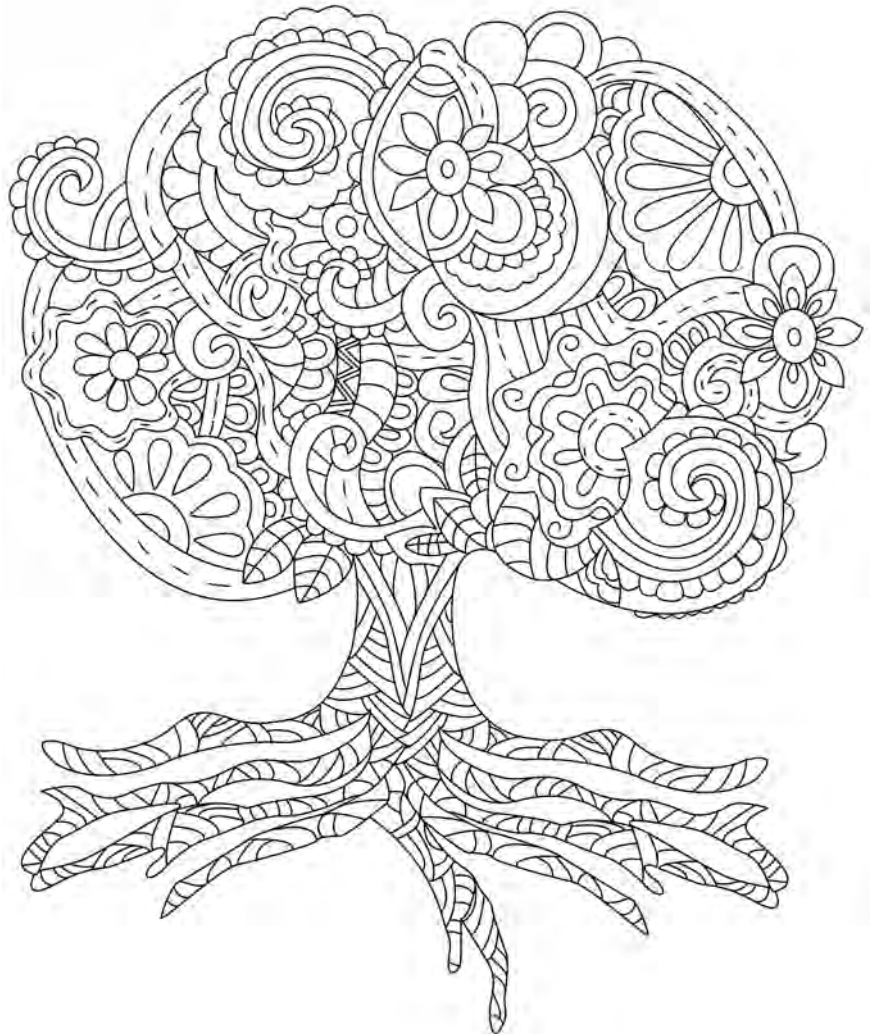
The coyote is a common resident in the Bosque. Coyotes are highly intelligent animals who play an important role in the ecosystem as a top predator.



Glossary

Wastewater & Drinking Water Terms

- **Aeration:** the introduction of air into a material.
- **Aquifer:** A wet underground layer of water-bearing rock or materials (gravel, sand, silt or clay) from which groundwater can be extracted using a well.
- **Chlorination:** the process of adding chlorine to drinking water to disinfect it and kill germs.
- **Clarifier:** a key piece of wastewater treatment equipment that assists in separating contaminants from water.
- **Digester:** a huge vessel where chemical or biological reactions are carried out.
- **Disinfection:** Water disinfection means the removal, deactivation or killing of pathogenic microorganisms.
- **Diversion:** the act or an instance of diverting or straying from a course, activity, or use.
- **Drinking water:** Water that has been purified to standards set for human consumption.
- **Drought:** a prolonged period of abnormally low rainfall, leading to a shortage of water.
- **Ecosystem:** a biological community of interacting organisms and their physical environment.
- **Fossil Fuel:** a natural fuel such as coal or gas, formed in the geological past from the remains of living organisms.
- **Groundwater:** Water located beneath the earth's surface in cracks between soil particles and fractures in rock formations. A large and usable quantity of groundwater is called an aquifer.
- **Inorganic material:** matter which is not derived from living organisms and contains no organically produced carbon.
- **Microorganism:** a microscopic organism, especially a bacterium, virus, or fungus.
- **Organic material:** matter that has come from a recently living organism.
- **Pollution:** the presence in or introduction into the environment of a substance or thing that has harmful or poisonous effects.
- **Reclamation:** the process of converting wastewater into water that can be reused for other purposes.
- **Reservoir:** a large natural or artificial lake used as a source of water supply.
- **Rio Grande:** one of the principal rivers in the southwest United States and northern Mexico. The Rio Grande begins in south-central Colorado in the United States and flows to the Gulf of Mexico.
- **Septic system:** A small-scale sewage treatment system common in areas with no connection to a municipal wastewater system. A septic tank is a key component of a septic system.
- **Sewer system:** A system of underground pipes used to transport human waste. In some communities, the sewer system is combined with the storm system (known as a combined sewer).
- **Sludge:** the solid, semisolid, or slurry residual material that is produced as a by-product of wastewater treatment processes
- **Water table:** The top surface of an aquifer (how far you have to dig down to find water).
- **Wastewater:** All the water that goes down a drain into a municipal sewer system or septic system, AKA sewage.
- **Well:** A man-made hole with a pipe that goes down to the water table. A pump helps bring the groundwater up.

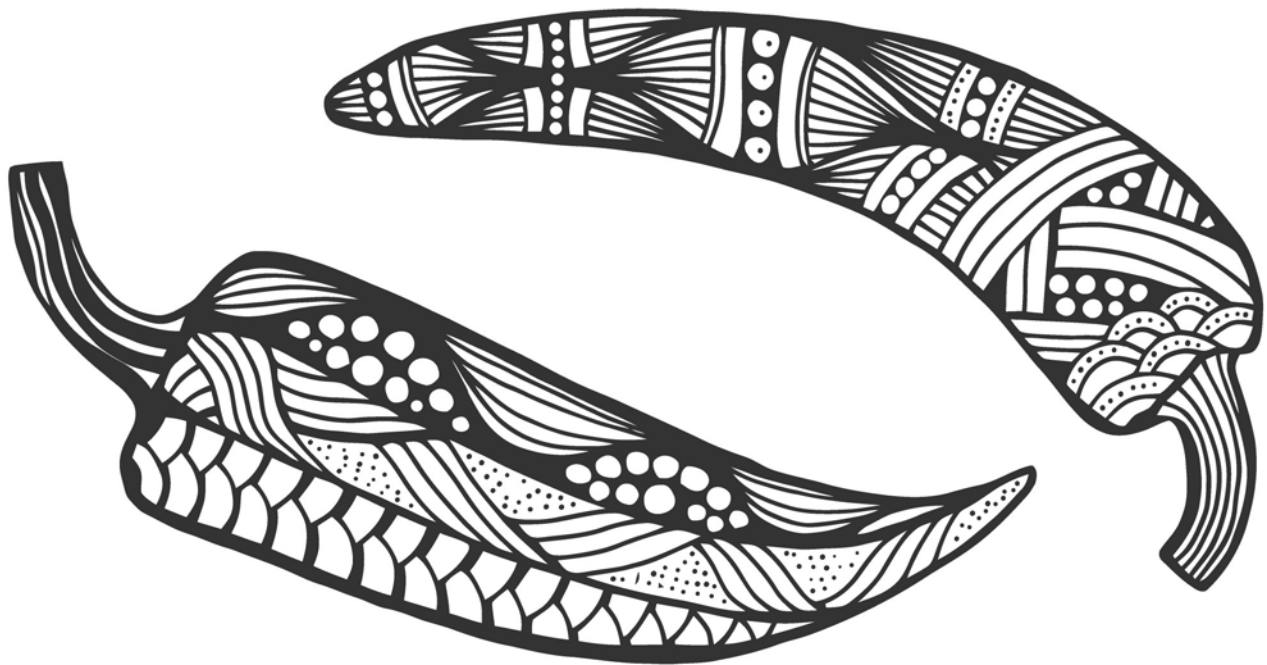


The Rio Grande Cottonwood has long been a sign of fresh water—both for people and for animals.

Glossary

Agriculture Terms

- **Abandon-** to withdraw from often in the face of danger or encroachment.
- **Acequia-** an irrigation ditch or canal (Spanish).
- **Agriculture Careers-** Agriculture is big business. The industry has been around for thousands of years and approximately 22 million Americans are involved in agriculture- related industries.
- **Agriculture strike-** a series of strikes by agricultural workers in the state of California in 1933.
- **Buffer-** something that serves as a protective barrier. An area of land designated for environmental protection.
- **Center-pivot Sprinkler -** is a method of crop irrigation in which equipment rotates around a pivot and crops are watered. An electric motor drives the sprinkler.
- **Contour farming-** follows the “natural shape” of the slope without altering it.
- **Dust Bowl-** a region that suffers from prolonged droughts and dust storms.
- **Drip emitters-** release water directly on to plants from the mainline tubing.
- **Erosion-** the movement of soil particles due to water or wind.
- **Forage-** feed/food for animals especially when taken by browsing or grazing.
- **Great Depression-** the 1930s, when the U.S. and many other countries were in a very bad depression.
- **Habitat-** the place or environment where a plant or animal naturally or normally lives and grows.
- **Irrigation-** the watering of land by artificial means to foster plant growth.
- **Laser level-** A tower-mounted laser level is used in combination with a sensor on a box- scraper in the process of bringing land to near-flatness with a slight grade for drainage.
- **Migrate-** to move from one country, place, or locality to another.
- **Plow-** an implement used to cut, lift, and turn over soil especially in preparing soil for seeds (seedbed).
- **Precipitation-** a deposit on the earth of hail, mist, rain, sleet, or snow.
- **Side Roll Sprinkler-** consists of rigid aluminum pipes, mounted on large wheels with the pipe acting as an axle. A gasoline engine drives the sprinkler.
- **Siphon-** a tube used to move water upwards from a reservoir or ditch and then down to a lower level of land.
- **Terrace farming-** wide steps are cut around the slopes of hills to prevent soil erosion.
- **Vegetation-** plant life or total plant cover (as of an area).



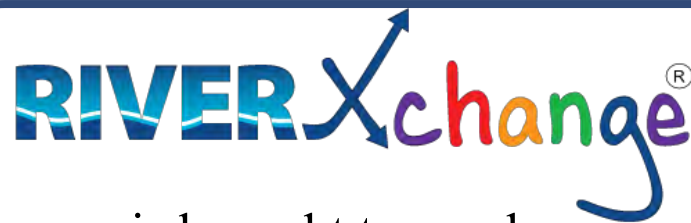
Chile is an important cash crop for farmers in New Mexico, with approximately 8,000 to 10,000 acres harvested annually in our state. In 2018 farmers produced 71,000 tons of chile!

The Rio Grande Watershed

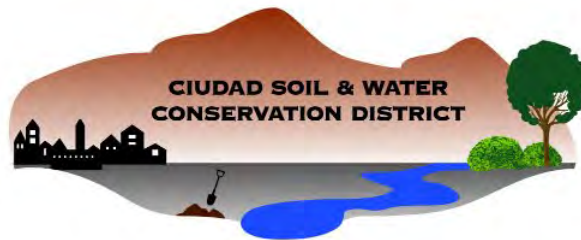


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<https://commons.wikimedia.org/wiki/File:Riograndeivermap.png>



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Where does my stormwater go?

Topic/Subject:	Watershed, Earth Science, Earth's Systems	Lesson Type (project, home/classroom lab, etc):	Home Lab
Essential Question:	Where does my stormwater go?	Grade Level(s):	5
Learning Objectives:	<p>At the end of this lessons students will be able to:</p> <ul style="list-style-type: none"> • INVESTIGATE where stormwater goes (Plan & Carry Out Investigations) • EXPLAIN why stormwater flows in certain paths (Structure & Function, Cause & Effect) • DEFINE & LIST EXAMPLES for permeable and non-permeable surfaces (Obtaining, Evaluating, & Communicating Information) • DRAW A MAP of where stormwater flows (Develop & Use Models, Systems & System) 		
Performance Expectation:	5-ESS2-1 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.		
Phenomenon:	Discover the path of stormwater based on the influence of permeable and non-permeable surfaces in students' immediate environment.		
Videos:	<ul style="list-style-type: none"> • Managing Stormwater Runoff by MetroVancouver (https://youtu.be/7crGd6E0Fsk) 		
Supplies:	<ul style="list-style-type: none"> • Watershed journal, pencil, and colored pencils 		
NGSS 3-Dimensional Learning	What We Learn: Disciplinary Core Ideas	What We Do: Science and Engineering Practices	How We Think: Crosscutting Concepts
Ideas / Practices / Concepts	ESS2: Earth & Space Science— Earth's Systems	<ul style="list-style-type: none"> • Plan & Carry Out Investigations • Develop & Use Models • Obtaining, Evaluating, & Communicating 	<ul style="list-style-type: none"> • Structure & Function • Cause & Effect • Systems & System Models

How does nature filter our stormwater?

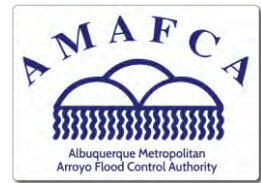
Topic/Subject:	Watershed, Earth Science, Earth's Systems, Engineering Practices	Lesson Type (project, home/classroom lab, etc):	Home Lab
Essential Question:	How does nature filter our stormwater?	Grade Level(s):	5
Learning Objectives:	<p>At the end of this lessons students will be able to:</p> <ul style="list-style-type: none"> • INVESTIGATE how different rock sizes and soil particle sizes filter pollutants from stormwater (Plan & Carry Out Investigations, Structure & Function, Systems & System Models) • DESIGN and BUILD a model that explains how soil filters stormwater (Develop & Use Models, Plan & Carry Out Investigations, Structure & Function, Systems & System Models) • COMPARE their filtration model to how an aquifer functions and EXPLAIN why ground water is typically cleaner than surface water (Obtaining, Evaluating, & 		
Performance Expectation:	<p>5-ESS2-1 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.</p> <p>3-5 ETS1-1 Define a simple design problem reflecting a need or a want that includes</p>		
Phenomenon:	Discover how the soil and other objects in nature are able to filter dirty stormwater through physical, biological, and chemical processes.		
Videos:	<ul style="list-style-type: none"> • April: Soils Clean and Capture Water by Soil Science Society of America—https://youtu.be/ZwQeTJEedk 		
Supplies:	Each student needs: watershed journal, colored pencils, 1 plastic bottle, 1/2 cup cotton balls, 1/2 cup large pebbles, 1/2 cup small pebbles, 1/2 cup sand, 1/2 cup leaf or plant matter you find on the top of the ground, 1 cup of dirty water, 1 empty clear cup		
NGSS 3-Dimensional Learning	What We Learn: Disciplinary Core Ideas	What We Do: Science and Engineering Practices	How We Think: Crosscutting Concepts
Ideas / Practices / Concepts	<p>ESS2: Earth & Space Science—Earth's Systems</p> <p>ETS1: Engineering Design</p>	<ul style="list-style-type: none"> • Plan & Carry Out Investigations • Develop & Use Models • Obtaining, Evaluating, & Communicating 	<ul style="list-style-type: none"> • Structure & Function • Systems & System Models

How does energy flow in my ecosphere?

Topic/Subject:	Aquatic Ecosystems, Energy Transfer, Engineering Design	Lesson Type (project, home/classroom lab, etc):	Home Lab
Essential Question:	How does energy flow in your ecosphere?	Grade Level(s):	5
Learning Objectives:	<p>At the end of this lessons students will be able to:</p> <ul style="list-style-type: none"> • DESIGN and BUILD an ecosphere—a self-sustaining aquatic ecosystem (Plan & Carry Out Investigations, Develop & Use Models, Energy & Matter, Systems & System Models) • DRAW A DIAGRAM that describes the movement of energy between plants and animals within your ecosphere (Develop & Use Models, Structure & Function, Energy & Matter, Systems & System Models) • COLLECT DATA over 7 days that records the organisms you see in the ecosphere (Analyzing & Interpreting Data) • GENERATE and COMPARE multiple possible solutions as to why you do or do not have certain organisms in your ecosphere (Structure & Function) 		
Performance Expectation	<p>5-PS3-1.Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.</p> <p>5-LS2-1.Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p> <p>5-ESS2-1 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.</p> <p>3-5-ETS1-2.Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</p>		
Phenomenon:	Discover that ecosystems are self sustaining.		
Videos:	<p>Both of these videos are very dry, so they're best for teachers to watch and get the general idea of ecospheres, then explain it to students</p> <ul style="list-style-type: none"> • “How Ecospheres Work” by Life in Jars? at https://youtu.be/KOImENkmlBo • “How to make a successful DIY closed ecosystem/ecosphere” by Life in Jars? at https://youtu.be/2vm8fqjJpZM 		
Supplies:	<ul style="list-style-type: none"> • Watershed journal, pencil, and colored pencils • Glass or plastic jar with air tight lid • Water, soil, and algae from a still water source 		
NGSS 3-Dimensional Learning	What We Learn: Disciplinary Core Ideas	What We Do: Science and Engineering Practices	How We Think: Crosscutting Concepts
Ideas / Practices / Concepts	<p>5-PS3 Energy</p> <p>5-LS2 Ecosystems: Interactions, Energy, and Dynamics</p> <p>3-5-ETS1 Engineering Design</p>	<ul style="list-style-type: none"> • Plan & Carry Out Investigations • Develop & Use Models • Analyzing & Interpreting Data 	<ul style="list-style-type: none"> • Structure & Function • Systems & System Models • Energy & Matter

How can stormwater affect my ecosystem?

Topic/Subject:	Aquatic Ecosystems, Protecting Earth's Resources	Lesson Type (project, home/classroom lab, etc):	Home Lab
Essential Question:	How can stormwater affect my ecosystem?	Grade Level(s):	5
Learning Objectives:	<p>At the end of this lessons students will be able to:</p> <ul style="list-style-type: none"> • DESIGN an experiment to test how different pollutants affect aquatic ecosystems (Plan & Carry Out Investigations, Develop & Use Models) • EXPLAIN why your ecosphere did or did not last for 30 days (Engaging in Argument from Evidence, Plan & Carry Out Investigations, Develop & Use Models, Structure & Function) • DEFINE pollution and DESCRIBE ways that households can pollute rivers through stormwater (Develop & Use Models, Systems & System Models) 		
Performance Expectation	<p>5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water</p> <p>5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p> <p>5-ESS2-1 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.</p> <p>5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.</p>		
Phenomenon:	Discover that everyday, household chemicals can pollute local water sources through stormwater runoff.		
Videos:	<ul style="list-style-type: none"> • “What is eutrophication?” by USoceangov at https://youtu.be/92TFJTtuq6k • “Eutrophication Explained—WELS (Waterpedia Environmental Learning Studies)” by Waterpedia at https://youtu.be/KJ6QijuAPuU 		
Supplies:	<ul style="list-style-type: none"> • Watershed journal, pencil, and colored pencils • Ecospheres from previous activity • Household pollutants—fertilizer and vinegar 		
NGSS 3-Dimensional Learning	What We Learn: Disciplinary Core Ideas	What We Do: Science and Engineering Practices	How We Think: Crosscutting Concepts
Ideas / Practices / Concepts	<p>5-LS1 Molecules to Organisms</p> <p>5-ESS Earth & Human Activity</p>	<ul style="list-style-type: none"> • Plan & Carry Out Investigations • Develop & Use Models • Engage in Argument from Evidence 	<ul style="list-style-type: none"> • Structure & Function • Cause & Effect • Systems & System Models



**Summary of AMAFCA's MS4
Public Involvement and Participation Program
FY 2021 (July 1, 2020 – June 30, 2021)**

NPDES Permit No. NMR04A000
Part I.D.5.h - Public Involvement and Participation

**Summary EPA Region 6 Stormwater Conference Agreement
Final Report**

2015 - 2021

Therese Ledesma, Kim Jones, and David Ramirez

Institute for Sustainable Energy and the Environment

November 11th, 2021



Table of Contents

Executive Summary.....	3
Chapter 1 – 2016 EPA R6 Stormwater Conference in Oklahoma City, OK.....	5
Chapter 2 – 2017 EPA R6 Stormwater Conference in San Antonio, TX.....	7
Chapter 3 – 2018 EPA R6 Stormwater Conference in Albuquerque, NM.....	10
Chapter 4 – 2019 EPA R6 Stormwater Conference in Denton, TX.....	13
Chapter 5 – 2020 EPA R6 Stormwater Virtual Training.....	16
Chapter 6 – 2021 EPA R6 Stormwater Conference in New Orleans, LA.....	20
Appendix A - Example Updated Conference Planning Schedule developed by the Conference Organizing Committee.....	24

Executive Summary

In 2015, TAMU-K entered into an Agreement with The Environmental Protection Agency (EPA) to co-host the annual EPA Region 6 Stormwater Conference. Along with USEPA Region 6, Texas A&M University Kingsville has co-hosted for the previous six EPA Region 6 Stormwater Conferences (2015 through 2021). The current Agreement runs through September 2021. What follows is an Executive Summary and Final Report for the duration of the agreement. The objective of this document is to detail and document the outcomes of the Agreement and the value added and accomplishments of the USEPA Region 6 Stormwater Conference Organizing Committee with its partnership with TAMUK over this period.

- Texas A&M University Kingsville has been successful in keeping the participant costs at \$350 per participant and still growing the conference resource balance from approximately \$26,000 (when the conference budget was first transferred to TAMU-K in 2015) to now being \$37,928. Now, moving forward, there are more funds and budget to work with for the 2022 conference implementation.
- Texas A&M University Kingsville is an institution of higher education, a member of the Texas A&M University System, and an entity of the State of Texas. Being that TAMU-K is an entity of the State of Texas, there is a nonprofit sales tax exemption that was in effect for most conferences which financially helped benefit the overall expense amount/conference budget.
- In 2020, due to the pandemic, Texas A&M University Kingsville worked with EPA staff and successfully co-hosted a virtual training along with the conference Organizing Committee for the Region MS4s, in spite of there being no revenue from participants.
- In 2021, Texas A&M University Kingsville in collaboration with the University of Oklahoma, worked with EPA staff and the Conference Organizing Committee to successfully host a hybrid Conference where both virtual and onsite options were offered. According to the Conference survey results, participants were appreciative of being able to have the virtual/hybrid option, allowing an additional 117 stormwater professionals to participate in most Conference activities due to reduced travel budgets and other pandemic restrictions. Onsite participants were also much appreciative to have the opportunity to attend and engage in an onsite Conference activities and training, especially after not being able to do so for some time due to the pandemic.
- Texas A&M University Kingsville working with EPA and the Organizing Committee has implemented a successful program to conduct venue bidding each year for the EPA Region 6 Stormwater Conference location of choice, helping ensure optimal value added for the organizers.
- Texas A&M University Kingsville has successfully contributed to improving the updated Conference Planning Schedule for the Organizing Committee.
- Texas A&M University Kingsville has typically brought 6 – 8 experienced graduate students who assist with the conference implementation, especially with technical support, at a very reasonable cost for the Program as part of the Agreement

It has been an honor and a privilege for Texas A&M University Kingsville Institute for Sustainable Energy and the Environment to be in a position to assist with co-hosting the annual

EPA Region 6 Stormwater Conference with EPA, despite the global pandemic. The remainder of this report is an annual summary of each Conference that highlights contributions and outcomes provided by EPA, the Organizing Committee, and TAMU-K.

Chapter 1 - 2016 EPA R6 Stormwater Conference in Oklahoma City, Oklahoma

The 2016 EPA R6 Stormwater Conference took place in Oklahoma City, Oklahoma at Sheraton Oklahoma City Downtown Hotel from October 3rd, 2016 – October 6th, 2016. Figure 1.1 shows the Save The Date that was distributed. The Conference was hosted by the City of Oklahoma City in partnership with EPA, TAMU-K, and the States of Region 6. The host city of Oklahoma City provided outstanding support for the Conference in 2016 led by the Organizing Committee including Raymond Melton (Oklahoma City), Carrie Evenson (ODEQ), Rebecca Dallen (Oklahoma City), Michelle Loudenback (ODEQ), Jason Vogel (OSU) and Michelle Chao (ODEQ). The EPA staff at Region 6 were well represented and led by Nellie Smith, Monica Burrell, Suzanna Perea, and Nasim Jahan. Each of these hosts aided in bringing in over 250+ registrations. There was a total of 76 early bird registrations, 114 regular registrations, 41 late registrations, 20 one-day registrations, 34 speaker/presenter registrations, and 3 student registrations. Overall, this makes for 288 total registrations.

There were 5 total registrants for the GI/LID Project competition. 3 of the 5 were from Texas and the other 2 were from Arkansas. Fieldtrips were offered on October 4, 2016 and there were 5 field trips offered; OKC Maintenance facility and household hazardous waste collection facility, Trailwoods GI/LID Demo project in Norman, OK, Precure Nursery and LID @ OK parks, Stormwater 101 - Construction AM, and Stormwater 101 Field Visit - Industrial (PM). Each field trip had at least 40 individuals signed up.

The Conference was successful bringing in 32 vendors/exhibitors for a grand total of \$26,300. As for sponsorships, there were 3 sponsors. Malarkey Roofing Products of Oklahoma City, Oklahoma supported the conference at a Gold sponsorship level of \$1,500. Atkins of Katy, Texas supported the conference at a Bronze sponsorship level of \$750. CP&Y, Inc of Oklahoma City, Oklahoma supported the conference at a Bronze sponsorship level of \$750. This added up to \$3,000 in total sponsorship amounts.

Financially, the 2016 EPA R6 Stormwater Conference did well in bringing in revenue to add on top of the revenue which was carried over from the 2015 EPA R6 Stormwater Conference. A total of \$22,637 was what carried over from the 2015 conference. The total revenue from the 2016 conference ended up at \$112,640. After subtracting operating expenses from travel, supplies, ISEE staff, and other conference expenses (\$110,824), the remainder of \$1,816 was the remaining revenue balance from the 2016 EPA R6 Stormwater Conference. When adding this to the starting balance, there is a total balance of \$24,454 to be carried into the following conference. Figure 1.2 shows a financial recap breakdown.

The website and agenda for this conference can be found here: <https://tamuk-isee.com/conferences/epa2016conference/#1473960587051-a40de925-ef64>

Chapter 2 - 2017 EPA R6 Stormwater Conference in San Antonio, Texas

The 2017 EPA R6 Stormwater Conference took place in San Antonio, Texas at Hilton Palacio del Rio from September 17, 2017 – September 21, 2017. The theme of the conference was “Urban Waters, Green Infrastructure and Resilient Communities”. Figure 2.1 shows the Save the Date that was distributed. The Conference was co-hosted by the San Antonio River Authority in partnership with EPA, TAMU-K, and the States of Region 6. The host city of San Antonio provided outstanding support for the Conference in 2017 led by the Organizing Committee including Michelle Garza (San Antonio River Authority), Rebecca Villalba (TCEQ), Macayla Coleman (TCEQ), Troy Dorman (Tetra Tech), and Curtis Beitel (HDR). The EPA staff at Region 6 were well represented and led by Nellie Smith, Monica Burrell, Suzanna Perea, and Nasim Jahan. Each of these hosts played a part in bringing in over 350+ registrations. There was a total of 132 early bird registrations, 179 regular registrations, 61 late registrations, 17 one day registrations, 60 speaker/presenter registrations, and 10 student registrations. Overall, this resulted in 459 total registrations. Figure 2.3 shows participants in a breakout session.

There were 16 total registrants for the GI/LID Project competition, all of which were from Texas. Field trips were offered on September 20, 2017 and there were 4 field trips offered; LID Tour, Stormwater Construction Inspections, Industrial Inspection 101, and Barge Tour. Each trip had at least 40 individuals sign up.

The Conference was successful in bringing in 27 vendors/exhibitors for a grand total of \$21,850. As for sponsorships, there was a total of 5 sponsors. MS4Web of Houston, Texas attended the conference and sponsored \$3,000. Pape Dawson of San Antonio, Texas attended the conference and sponsored \$5,000. SARA of San Antonio, Texas attended the conference and sponsored \$3,000. CISEC attended the conference and sponsored \$2,000. Atkins Global of Houston, Texas attended the conference and sponsored \$1,000. This totals to \$14,000 in total sponsorship amounts.

Financially, the 2017 EPA R6 Stormwater Conference was outstanding in bringing in revenue to add on top of the balance that carried over from both the 2015 and 2016 conferences (\$24,454). The total revenue from the 2017 conference ended up at \$120,320. Subtracting total expenses from travel, supplies, and other Conference expenses (\$101,651), resulted in a total of \$18,669 as the remaining revenue balance from the 2017 EPA R6 Stormwater Conference. When adding this to the starting balance, there is a total balance of \$43,123 to be carried into the following conference. Figure 2.4 shows a financial recap breakdown.

The 2017 EPA R6 Stormwater Conference survey ended with 67 responses. Of these, 54 participants believed that the content of the sessions were very relevant to their profession. 52 participants responded that all technical difficulties were handled in a timely manner. On a 1-5 sliding scale with 1 being the least useful and 5 being the most useful, 25 participants rate the usefulness of exhibitors a 5, most useful. 36 out of the 67 participants mentioned that their employer is an MS4. 56 participants responded that the length of the conference is just right. 46 participants responded that the vendors/exhibitors were appropriate and relevant. According to Figure 2.2, the conference was rated a 4 overall.

The website for this conference can be found here: <https://tamuk-isee.com/epa2017conference/>

The agenda for this conference can be found here: <https://tamuk-isee.com/wp-content/uploads/2017/10/2017-EPA-SW-Conference-Agenda-with-presentations.pdf>



Figure 2.1 shows the Save the Date that was created and distributed to promote the 2017 EPA R6 Stormwater Conference (San Antonio)

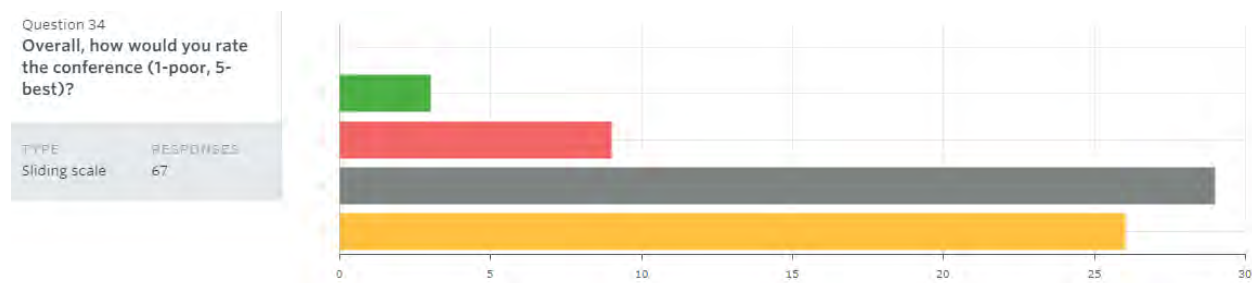


Figure 2.2 shows the survey response to the question of how participants would overall rate the conference (San Antonio, 2017)



Figure 2.3 shows participants in a breakout session (San Antonio, 2017)

Starting Balance = \$24,454	\$ 24,454.00				
Revenue: Onsite					
Description	Number	Price	Revenue		
On-site Conference Registration	228	Varied	\$73,470		
One Day Registration	19	\$200	\$3,800		
Early Bird Registration	111	\$300	\$33,300		
Regular Registration	52	\$350	\$18,200		
Late Registration	46	\$395	\$18,170	1 late registration was refunded	
Exhibitors	25	Varied	\$21,750		
Exhibitor with 1 additional representative	12	\$750	\$9,000		
Exhibitor with 3 additional representatives	11	\$950	\$10,450		
Exhibitor with 4 additional representatives	2	\$1,150	\$2,300		
Sponsorships	5	Varied	\$14,000		
Targeted Sponsor	1	\$1,000.00	\$1,000		
Gold Sponsor	1	\$2,000	\$2,000		
Platinum Sponsor	2	\$3,000	\$6,000		
Exclusive Sponsor	1	\$5,000	\$5,000		
Poster Comp.	10	\$50	\$500		
Speaker Registration	32	\$300	\$9,600		
Student Registration	10	\$100	\$1,000		
Subtotal			\$120,320		
Actual Expenses	Value	Details			
Travel Expenses	\$8,234	Staff meals, flights, rentals, and hotel scouting			
Equipment Expenses	\$4,075	PSAV Charges			
ISEE Staff T&E	\$34,500	ISEE staff time and effort pay			
Conference Related Expenses	\$54,842	Room charges, food and beverage, and hotel bill			
Subtotal	\$101,651				
Starting Balance	\$24,454				
2017 Revenue - Expenses	\$18,669				
2017 Balance + Starting Balance	\$43,123				

Figure 2.4 shows the financial recap following the 2017 EPA Region 6 SW Conference

Chapter 3 - 2018 EPA R6 Stormwater Conference in Albuquerque, New Mexico

The 2018 EPA R6 Stormwater Conference took place in Albuquerque, New Mexico at Hotel Albuquerque at Old Town from August 19, 2018 – August 23, 2018. The theme of the conference was “Our Water, Our Future: Communication, Collaboration, and Adaptive Management for Improved Stormwater Quality”. Figure 3.1 shows the Save The Date flyer that was distributed. The Conference was hosted by Bernalillo County, Albuquerque Metropolitan Flood Arroyo Control Authority, and Southern Sandoval County Arroyo Flood Control Authority in partnership with EPA, TAMU-K, and the States of Region 6. The host city of Albuquerque provided outstanding support for the Conference in 2018 led by the Organizing Committee including Dave Gatterman (SSCAFCA), Kali Bronson (Bernalillo County), Patrick Chavez (AMAFCA) and Shelly Eaton (City of Albuquerque). The EPA staff at Region 6 were well represented and led by Nellie Smith, Monica Burrell, Suzanna Perea, and Nasim Jahan. Each of these hosts played a part in bringing in over 300+ registrations. There was a total of 69 early bird registrations, 104 regular registrations, 102 late registrations, 9 one day registrations, 29 speaker/presenter registrations, and 8 student registrations. Overall, this resulted in 321 total registrations.

There were 5 total registrants for the GI/LID Project Competition, all of which were from Texas. Fieldtrips were offered on August 22, 2018 and there were 4 field trips offered; A Look at Watershed Restoration in the Arid Southwest, Stormwater Quality and Engineering, Green Stormwater Infrastructure and Arid Low Impact Design, and Green Stormwater Infrastructure and Arid Low Impact Design (GSI/AridLID) Design Charrette. Figure 3.3 shows some of the Conference participants at a field trip site. In addition, two bicycle field trips were offered to showcase stormwater management by the city of Albuquerque. Each field trip had at least 35 individuals signed up. Each bicycle field trip had at least 10 individuals signed up.

The Conference was successful in bringing 26 vendors/exhibitors for a grand total of \$15,920. As for sponsorships, there was an impressive amount of 12 sponsors. 10 out of the 12 sponsors were from the host city, Albuquerque, New Mexico. Figure 3.2 shows one of the vendors at the conference. The other 2 remaining sponsors were from Texas. Each sponsor participated in the silver level sponsorship or higher. The grand total in sponsorships resulted in revenue of \$26,500.

Financially, the 2018 EPA R6 Stormwater Conference did well in bringing revenue to add on top of the balances that carried over from the 2015, 2016, and 2017 conferences (\$42,123). The total revenue from the 2018 conference ended up at \$131,575. The total expenses from travel, supplies, and other Conference expenses, totaled \$124,026. Subtracting total expenses, you get \$7,549 as the total revenue from the 2018 EPA R6 Stormwater Conference. When adding this to the starting balance, there is a total balance of \$50,672 to be carried into the following conference. Figure 3.4 shows a financial recap breakdown.

The website for this conference can be found here: <https://tamuk-isee.com/conferences/epa2018conference/>

The agenda for this conference can be found here: <https://tamuk-isee.com/wp-content/uploads/2018/08/Copy-of-Full-Agenda-1.pdf>



Figure 3.1 shows the Save the Date that was created and distributed to promote the 2018 EPA R6 Stormwater Conference (Albuquerque, 2018)



Figure 3.2 shows an exhibitor at the 2018 EPA R6 Stormwater Conference (Albuquerque, 2018)



Figure 3.3 shows conference participants at a field trip site (Albuquerque, 2018)

Revenue: Onsite									
Description	Number	Price	Revenue						
On-site Conference Registration	190	Varied	\$64,045						
One Day Registration	17	\$200	\$3,400						
Early Bird Registration	57	\$300	\$17,100						5 early bird registrations were refunded
Regular Registration	51	\$350	\$17,850						2 regular registrations were refunded
Late Registration	65	\$395	\$25,675						
Exhibitors	20	Varied	\$17,080						
Exhibitor with no additional representatives	1	\$620	\$620						
Exhibitor with 1 additional representative	11	\$770	\$8,470						
Exhibitor with 2 additional representatives	1	\$820	\$820						
Exhibitor with 3 additional representatives	1	\$950	\$950						
Exhibitor with 3 additional representatives	4	\$970	\$3,880						
Exhibitor with 4 additional representatives	2	\$1,170	\$2,340						
Sponsorships	11	Varied	\$29,500						
Silver Sponsor	1	\$1,500	\$1,500						
Gold Sponsor	4	\$2,000	\$8,000						
Platinum Sponsor	4	\$3,000	\$12,000						
Exclusive Sponsor	2	\$4,000	\$8,000						
Poster Comp.	5	\$50	\$250						
Speaker Registration	28	\$300	\$8,400						
New Group Registration	7	Varied	\$11,500						
Group Registration for 5	2	\$1,250	\$2,500						
Group Registration for 6	2	\$1,500	\$3,000						
Group Registration for 8	3	\$2,000	\$6,000						
Student Registration	8	\$100	\$800						
Subtotal			\$131,575						
Actual Expenses	Value	Details							
Travel Expenses	\$11,522	Staff meals, flights, rentals, and hotel scouting							
Equipment Expenses	\$4,500	PSAV Charges							
ISEE Staff T&E	\$44,124	ISEE staff time and effort pay							
Conference Related Expenses	\$63,880	Room charges, food and beverage, and hotel bill							
Subtotal	\$124,026								
Starting Balance	\$42,123								
2018 Revenue - Expenses	\$7,549								
2018 Balance + Starting Balance	\$50,672								

Figure 3.4 shows the financial recap following the 2018 EPA Region 6 SW Conference

Chapter 4 - 2019 EPA R6 Stormwater Conference in Denton, Texas

The 2019 EPA R6 Stormwater Conference took place in Denton, Texas at Embassy Suites by Hilton at Denton Convention Center from July 28, 2019 – August 1, 2019. The theme of the conference was “Responding to Change: Dynamic Stormwater Management in Economic, Political, and Climatic Transitions”. Figure 4.1 shows the Save the Date that was distributed. The conference was hosted by The City of Denton, Texas in partnership with EPA, TAMU-K, and the States of Region 6. The host city of Denton provided outstanding support for the Conference in 2019 led by the Organizing Committee including David Hunter (City of Denton), Christi Upton (City of Denton), Edith Marvin (North Texas CoG), Webster Mangham (Trinity River Authority), Perry Harts (City of Frisco) and Jason Pierce (Upper Trinity Water District). The EPA staff at Region 6 were well represented and led by Nellie Smith, Monica Burrell, Suzanna Perea, and Nasim Jahan. Each of these hosts played a part in bringing in over 400+ registrations. Significantly, this was the largest Region 6 Stormwater Conference ever with over 400 participating water professionals, city managers, and planners. Significant groups of participants came from the Metroplex cities of Dallas, Fort Worth, Plano, Carrollton, Frisco, Denton, and many others.

There was 1 total registrant for the GI/LID Project Competition from DPS Design. Field trips were offered on July 31, 2019 and there were 4 field trips offered; Storm Construction Inspections – TCEQ, Low Impact Development Denton Square, Razor Ranch – Town Center GI, and Stormwater Industrial Inspection – Peterbilt Motors. Figure 4.2 shows some of the Conference participants at the Stormwater Industrial Inspection – Peterbilt Motors field trip.

The conference was successful in attracting 17 vendors/exhibitors for a grand total of \$23,010 in revenue. As for sponsorships, there were 6 total sponsors. 5 out of the 6 sponsors were from Texas. The remaining sponsor was from New Mexico. Each sponsor participated in the silver level sponsorship or higher. The grand total in sponsorships came out to \$11,500.

Financially, the 2019 EPA R6 Stormwater Conference did well in bringing revenue to add on top of the balance that carried over from the 2015, 2016, 2017, 2018 conferences (\$50,672). The total revenue from the 2019 conference ended up at \$164,060. Total expenses from travel, supplies, and other Conference expenses, totaled \$153,018. Subtracting the expenses from revenue, resulted in a balance of \$11,042 as remaining balance from the 2019 EPA R6 Stormwater Conference. When adding this to the starting balance, there is a total balance of \$61,714 to be carried into the following conference. Figure 4.3 shows a financial recap breakdown.

The website for this conference can be found here: <https://tamuk-isee.com/conferences/epa2019conference/>

The agenda for this conference can be found here: <https://tamuk-isee.com/wp-content/uploads/2019/07/FOR-WEBSITE-2019-EPA-Region-6-Stormwater-Conference-Final-.pdf>

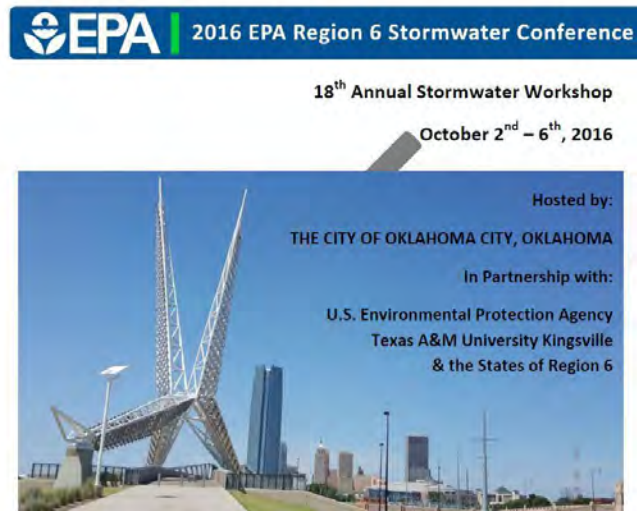


Figure 4.1 shows the Save the Date that was created and distributed to promote the 2019 EPA R6 Stormwater Conference (Denton, TX).



Figure 4.2 shows conference participants at the Stormwater Industrial Inspection – Peterbilt Motors field trip (Denton, 2019)

Revenue: Onsite/Virtual									
Description	Number	Price	Revenue						
On-site Conference Registration	238	Varied	\$78,350						
One Day Registration	5	\$200	\$1,000						
Early Bird Registration	97	\$300	\$29,100	3 early bird registrations were refunded					
Regular Registrations	99	\$350	\$34,650	1 regular registration was refunded					
Late Registrations	30	\$395	\$11,850						
Registration with code ADD_GROUP_2019	7	\$250	\$1,750						
Exhibitors	18	Varied	\$24,560						
Exhibitors with no additional representative	2	\$770	\$1,540						
Exhibitors with 1 additional representative	1	\$1,170	\$1,170						
Exhibitors with 2 additional representatives	6	\$1,200	\$7,200						
Exhibitors with 3 additional representatives	7	\$1,550	\$10,850						
Exhibitors with 4 additional representatives	2	\$1,900	\$3,800						
Sponsorships	13	Varied	\$25,000						
Silver Sponsor	11	\$2,000	\$22,000						
Targeted Sponsor	2	\$1,500	\$3,000						
Speaker Registration	39	\$300	\$11,700						
Poster Comp.	4	\$50	\$200						
New Group Registration	15	Varied	\$22,750						
Group Registration for 5	6	\$1,250	\$7,500						
Group Registration for 6	6	\$1,500	\$9,000						
Group Registration for 7	1	\$1,750	\$1,750						
Group Registration for 8	1	\$2,000	\$2,000						
Group Registration for 10	1	\$2,500	\$2,500						
Student Registration	15	\$100	\$1,500						
Subtotal			\$164,060						
Actual Expenses	Value	Details							
Travel Expenses	\$5,074	Staff meals, flights, rentals, and hotel scouting							
Equipment Expenses	\$7,063	PSAV Charges, Mirasmart, and Smartsheets							
Program Assistant A&M Kingsville Encumbered for FY 2020	\$36,000								
ISEE Staff T&E	\$47,796	ISEE staff time and effort pay							
SW Scholarships for Students With Committee Approval	\$5,000								
Conference Related Expenses	\$52,085	Room charges, food and beverage, and hotel bill							
Subtotal	\$153,018								
Starting Balance	\$50,672								
2019 Revenue - Expenses	\$11,042								
2019 Balance + Starting Balance	\$61,714								

Figure 4.3 shows the financial recap following the 2019 EPA Region 6 SW Conference

Chapter 5 – 2020 EPA Region 6 Virtual Stormwater Training

The 2020 EPA Region 6 Stormwater Conference was originally set to take place in New Orleans, Louisiana. However, due to the global pandemic, the conference in New Orleans, Louisiana was postponed until 2021. Members of the Conference Organizing Committee came together and decided to offer a virtual training, free of charge, to individuals. The 2020 EPA R6 Virtual Stormwater Training took place from August 11th, 2020 – August 13, 2020. All participants were still offered a certification, after successful completion of the Virtual Training Survey.

The 2020 EPA Region 6 Virtual Stormwater Training brought in an impressive amount of attendees. Day 1 of the virtual training had 507 participants. Day 2 of the virtual training had 505 participants. Day 3 of the virtual training had 471 participants. Prior to the virtual training, each registered participant received an email which included the link to each day's virtual training. In addition, the email included an agenda, as shown in Figure 5.1, and a Virtual Training Roadmap, as shown in Figure 5.2.

The software used to host the virtual training was Blackboard Collaborate Ultra which is an educational software that Texas A&M University Kingsville has access to and can provide for the Conference through its Agreement with EPA. Training videos on how to effectively use the Blackboard Collaborate Ultra were provided on the conference website. Being that the Virtual Training had 450+ participants per day, the software automatically turned participant's camera and microphone off in order to reduce background noise/camera distractions. Participants were only allowed to use the chat option. The chat room features were successful in allowing for attendee written questions, as open microphones would have been unmanageable for such a large group.

The 2020 EPA R6 Outstanding Green Infrastructure/Low Impact Development Project Competition still took place and was successful in bringing in a total of 10 projects in the Professional category and 3 projects in the Student category.

Financially, no revenue was brought in due to the fact that the Virtual Training was free of charge to all participants. However, there were few expenses to be paid. The expenses were ISEE staff, ISEE program assistant, Smartsheets Software, and Mirasmart Software which totaled to \$45,729. The remaining budget balance when factoring in the starting balance (\$61,594 as of September 1, 2019) minus the expenses (\$45,729), came to be \$15,865. Figure 5.5 shows a financial recap breakdown.

The EPA Region 6 SW Virtual Training Survey took place on Google Docs and the link to the survey was sent out at the end of each virtual training day. The link was also posted on the training website and on the Roadmap that participants received. A total of 491 responses were received from the virtual training participants. Figure 5.3 shows the summary of the responses received (460) about the overall rating of the virtual training experience. A total of 219 comments were received upon completion of the survey and of those 219 comments, 58 of them were “good job”, “well done”, and other commendable praise for the team. A total of 20 comments targeted areas that needed improvement whether to allow some break time in between virtual sessions, connectivity/technical issues, turning off pop-ups and notifications while in the

sessions, and misunderstanding of when and how many surveys to fill out. Based on the positive responses received, the Conference Organizing Committee recommended that a Virtual Training for Stormwater Management participation option scenario be considered for the 2021 EPA Region 6 Stormwater Conference to be hosted by the City of New Orleans. Figure 5.4 shows the summary of the likelihood of participants physically attending the EPA R6 Stormwater Conference in 2021 in New Orleans, Louisiana. The responses were used for the Organizing Committee to justify that a virtual option participation scenario be implemented for the New Orleans 2021 Conference.

The website for the virtual training can be found here: <https://tamuk-isee.com/2020-epa-r6-virtual-training/>

The agenda for the virtual training can be found here: https://tamuk-isee.com/wp-content/uploads/2020/08/2020-Virtual-SW-Training-Final-Agenda_8-4-2020.pdf

Figure 5.3 shows the summary of the responses received about the overall rating of the virtual training experience ranging from 1, poor, to 5, best – which illustrates that 87% of the participants found their experience to be between good and best (2020 virtual training)

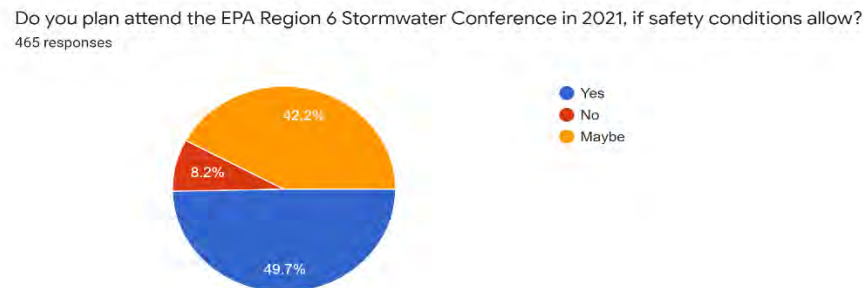


Figure 5.4 shows the summary of the responses received about the likelihood of participants physically attending the EPA Region 6 Stormwater Conference in 2021 in New Orleans– which illustrates that over 49% of participants said yes, they would attend. Meanwhile, over 42% said they might attend

2020 EPA Region 6 SW Conference Financial Recap		v10/06/2021		
Starting Balance = \$61,594		\$61,594		
Actual Expenses	Value	Details		
Mirasmart software prior purchase	\$1,000			
SmartSheet software prior purchase	\$1,188			
SW Conference Program Assistant (1/1/20-10/1/20)	36,379	Tessie Ledesma T&E		
ISEE faculty (2+ weeks T&E - May-August)	5,662	Kim Jones T&E		
ISEE Staff (Grad Students 5 x \$300)	\$1,500	Grad Students T&E		
Subtotal	\$45,729			
Expenses	\$45,729			
2020 Starting Balance - Expenses	\$15,865.00			

Figure 5.5 shows the financial recap following the 2020 EPA Region 6 Virtual SW Training

Chapter 6 - 2021 EPA R6 Stormwater Conference in New Orleans, Louisiana

The 2021 EPA R6 Stormwater Conference took place in New Orleans, Louisiana at the Hyatt Regency New Orleans from August 8, 2021 – August 12, 2021. The Conference Organizing Committee decided to move forward with a virtual option after receiving feedback from 2020 virtual training participants in which attendees mentioned the desire to have a virtual option offered, which ended up with a significant turnout. Hence, the Conference was offered both on-site and virtually and was the first hybrid conference conducted by EPA, TAMU-K and the Conference Organizing Committee. The theme of the conference was “Weathering the Storm: Resiliency & Protection through Design”. Figure 6.1 shows the Save the Date that was distributed. The conference was hosted by the City of New Orleans, Sewerage & Water Board of New Orleans, and Jefferson Parish, in partnership with EPA, TAMU-K, and the States of Region 6. The host city of New Orleans provided outstanding support for the Conference in 2021 led by the Organizing Committee including Scott Finney (SWBNO), Grace Vogel (SWBNO), Cheryn Robles (City of New Orleans), and Sami Khalil (Jefferson Parish). The EPA staff at Region 6 were well represented and led by Monica Burrell, Suzanna Perea, and Nasim Jahan. Each of these hosts played a part in bringing in 153 on-site registrations and 98 virtual registrations who expressed that they were very grateful a virtual option was made available, especially due to the pandemic, budget cuts, and limited travel. There was a total of 69 early bird registrations, 17 moderator registrations, 48 regular registrations, 31 late registrations, 31 speaker/presenter registrations, and 4 student registrations. Overall, this makes for 251 total registrations.

In order to ensure the health and safety of all participants, the conference operated within the guidelines of the CDC, the State of Louisiana, and the City of New Orleans. The on-site COVID-19 safety protocols in place required all attendees to wear masks regardless of vaccination status and attendees were also advised to maintain 6 feet of distance between other attendees. In addition, all attendees had their temperature checked each morning by the staff at the registration desk and wore a safety sticker daily in a visible location.

There were 4 total registrants for the GI/LID Project competition. Field trips were offered on August 11, 2021 and there was 4 field trips offered; Gulf Intracoastal Waterway West Closure – Largest Municipal Pump Station in the World, Award Winning Stormwater Network, The Port of New Orleans Mississippi River Fireboat Tour, and Stormwater Industrial Green Infrastructure Tour. Figure 6.2 shows conference participants at the Port of New Orleans Mississippi River Fireboat Tour field trip. Each trip had at least 20 individuals sign up. In addition, a Stormwater Bike Tour was offered on August 8th, 2021. The Stormwater Bike Tour had 23 individuals signed up.

The Conference was successful in bringing in 24 vendors/exhibitors for a grand total of \$26,650 in revenue. As for sponsorships, there was a total of 3 sponsors. Digital Engineering of Kenner, Louisiana attended the conference and sponsored \$2,000. Advanced Drainage Systems of Winter Garden, Florida attended the conference and sponsored \$1,000. CISEC attended the conference and sponsored \$1,000. This totals to \$4,000 in total sponsorship amounts.

Financially, despite the global pandemic, the 2021 EPA R6 Stormwater Conference did great in bringing revenue to add on top of the balance that carried over from all previous conferences (\$15,865.01). The total revenue from the 2021 hybrid conference ended up at \$115,795.

Subtracting travel, supplies, and other conference expenses (\$93,395), resulted in \$22,400 as the total revenue balance from the 2017 EPA R6 Stormwater Conference. Factoring in the beginning balance resulted in \$38,265 as the total available balance for the 2022 Conference. Figure 6.4 shows a financial recap breakdown.

The 2021 EPA R6 Stormwater Conference survey ended with 179 responses. If participants wished to receive a certification, they needed to successfully complete the survey. 73% would like the same amount of time spend on networking opportunities moving forward, while 24% would like more networking opportunities. 87% of individuals did say they plan to attend the conference next year. As per location, when reviewing comments, Texas took the lead as to where participants would like the Conference to be held next year. Multiple comments did mention Austin, Texas as a good location. Comments reflected that improved audio and visual integration of online presenters/on-site audience would be needed moving forward if a hybrid conference is offered again. Comments also reflected that better virtual audio would be recommended for the virtual conference aspect. According to Figure 6.3, it is clear that the conference ended with a 4 out of 5 overall rating for both the on-site and virtual aspect.

Some participants recommended utilizing more familiar virtual platforms next year for the virtual portion such as Zoom or MS Teams instead of the Blackboard software. It is noteworthy that Texas A&M University Kingsville has transitioned all of its instructional platforms from Blackboard to Zoom effective in December 2021. The University has a license for the large scale implementation of this software for education and outreach including Conference support.

The website for this conference can be found here: <https://tamuk-isee.com/conferences/epa2021conference/>

The agenda for this conference can be found here: https://tamuk-isee.com/wp-content/uploads/2021/08/2021-Conference-Program_-8-4-21.pdf



Figure 6.1 shows the Save the Date that was created and distributed to promote the 2021 EPA R6 Stormwater Conference



Figure 6.2 shows conference participants at the Port of New Orleans Mississippi River Fireboat Tour field trip

Overall, how would you rate the conference?

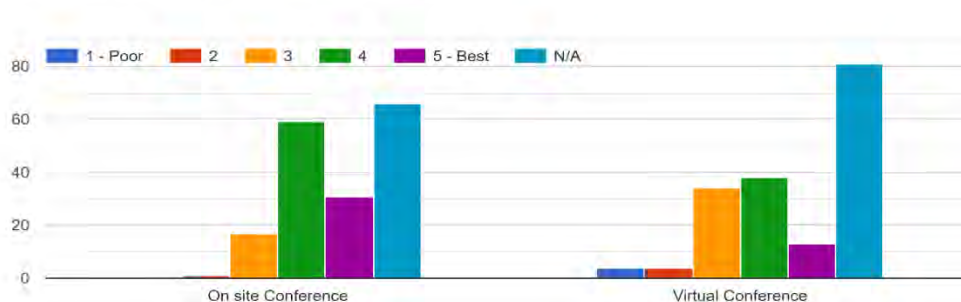


Figure 6.3 shows the survey results for the question on how participants would rate the conference (New Orleans, 2021)

On-site Conference Registration	149	Varied	\$48,605						
One Day Registration	5	\$200	\$1,000						
Early Bird Registrations	61	\$300	\$18,300	1 early bird registration was refunded due to accidentally being charged twice					
Regular Registration	47	\$350	\$16,450	1 regular registration was refunded due to passing of family member					
Late Registration	29	\$395	\$11,455						
Registration with code NOCONF2021	7	\$200	\$1,400	Individuals who assisted with planning committee calls and committees					
Exhibitors	24	Varied	\$26,650						
Exhibitors with no additional representative	10	\$900	\$9,000						
Exhibitors with 1 additional representative	10	\$1,150	\$11,500						
Exhibitors with 2 additional representatives	2	\$1,400	\$2,800						
Exhibitors with 3 additional representatives	1	\$1,650	\$1,650						
Exhibitor with 4 additional representatives	1	\$1,700	\$1,700						
Sponsorships	3	Varied	\$4,000						
Targeted Sponsor	2	\$1,000	\$2,000						
Silver Sponsor	1	\$2,000	\$2,000						
Speaker Registration	31	\$300	\$9,300						
Student Registration	4	\$100	\$400						
Virtual Conference Registration	97	\$225	\$21,825						
Invoices	14	Ranges	\$5,015						
Invoice - Virtual Conference	1	\$225	\$225						
Invoice - Early Bird Reg	9	\$300	\$2,700						
Invoice - Late Reg	2	\$395	\$790						
Invoice - On-Site Speaker Reg	1	\$300	\$300						
Invoice - Reg with code NOCONF2021	5	\$200	\$1,000	Individuals who assisted with planning committee calls and committees					
Subtotal			\$115,795						
Actual Expenses	Value	Details							
Transportation (Airlines & Car Rental)	\$1,421	1 staff air trans (\$155.71); van rental 1 week+ (\$1,265.24)							
Event Transportation	\$2,458	Transportation to and from fieldtrip/entertainment events							
Hotel venue F&B, AV support, staff lodging	\$43,198	Actual includes \$31, 379.34 F&B; AV support 4,477.63; staff lodging 7,632.81 - \$161.03 less B							
Networking Events	\$2,646	Bike tour (\$650), catering for event center (\$1,205.77), entertainment center (\$790)							
ISEE (Grad student T&E)	\$6,750	6 students admin/tech support for 2 weeks							
ISEE faculty T&E	\$9,309	(3 weeks T&E for Jones)							
Total food + Gas	\$2,881	Jones (\$1,223.48) and Ledesma (\$1,657.63) - meals for student assistants and gas for rental v							
Program assistant (Jan-Sept)	\$22,498	9 months ISEE Program Assistant 75% effort							
Supplies for Conference	\$2,235	Ledesma - Print programs & conference posters (\$430.08) Dept. Account - Portable projector							
Subtotal	\$93,395								
Beginning Balance	\$15,865								
Revenue - Expenses	\$22,400								
Remaining balance	\$38,265								

Figure 6.4 shows the financial recap following the 2021 EPA Region 6 SW Conference

Appendix A

Example Overall EPA Region 6 Stormwater Conference Planning Schedule (Version 10/05/2021)

***Refer to page 4 for the virtual conference planning schedule**

5 months ahead – March	Target Date		Committee*
Determine meeting location		Complete	Planning Comm.
Recruit and Select Local Chairperson			
Recruit & Confirm Committee Members			Planning Comm.
Confirm Meeting Dates			Planning Comm.
Establish Tentative Program Schedule			EPA
Establish Committee planning meeting dates			Planning Comm.
City/Hotel site inspection			SWBNO
Sign contract with hotel venue			TAMUK
Create Marketplace store and products			TAMUK
Make Marketplace store live			
Establish Exhibitor contacts			E/S Comm.
Determine Registration Fee			Planning Comm.
Build Preliminary Budget			TAMUK
Develop Save the Date			EPA
Develop Conference Banner			EPA
Initial Marketing Step-Save the Date			EPA
First Conference Committee Mtg.			EPA
Begin Monthly Committee Conference Call			EPA
Assign Committee Chairs (See Categories Below)			
Build Tentative Agenda			A/P Comm.
Determine Offsite Options for Field Trips			F/SV Comm.
Second Marketing Step-Website listing			TAMUK
Confirm Certification Classes			W/C Comm.
Secure 50% of Keynotes (2 or more)			KS Comm.
1st Major Marketing Step-State Solicitation			A/P Comm.
Recruit Local Hospitality			TAMUK/Host
Secure Transportation Proposals (RFP)			TAMUK/Host

4 months ahead - April	Target Date		Committee*
Monthly Committee Mtg (2)			All
TAMUK conducts mock abstract submission to ensure all previously requested and/or new modifications are accessible and working properly			TAMUK/Host
TAMUK conducts mock abstract review to ensure all previously requested and/or new modifications are accessible and working properly			TAMUK/Host
TAMUK conducts a mock abstract review assignment to EPA to ensure all previously requested and/or new modifications are accessible and working properly			TAMUK/Host
Review Program with Hotel			TAMUK/Host
Call for Presentations – First Deadline			A/P Comm.
TAMUK conducts weekly reviews of Mirasmart to identify and contact individuals who have begun an abstract submission but not completed it.			TAMUK/Host
TAMUK conducts weekly reviews of Mirasmart to identify completed abstract submissions and assigns 3 reviewers per abstract via Mirasmart or direct email (if have not yet registered for Mirasmart)			TAMUK/Host
Call for Presentations – Extended Deadline			A/P Comm.

3 months ahead – May	Target Date		Committee*
Receive, Peer Review, Accept Presentations			A/P Comm.
TAMUK contacts individuals who completed abstract submission by the original abstract deadline – notify whether the abstract is accepted, needs more information, or is denied			TAMUK/Host
TAMUK requests, receives and provides to 3 reviewers, updated abstracts from individuals who's abstracts required additional information			TAMUK/Host
Menu Selection with Hotel			E/FB Comm.
Staff Roomlist to Hotel			TAMUK/Host
Secure 100% Speakers			KS Comm.

TAMUK transmits formal keynote invitation letter with information about reimbursement for travel, lodging and per diem costs and a deadline by when to confirm reimbursement will be requested.			TAMUK/Host
Conference Agenda posted on website			A/P Comm.
Finalize Agenda			A/P Comm.
Confirm Field Sites			F/SV Comm.
Secure Session Moderators/Chairpersons			A/P Comm.

2 months ahead – June

Target Date

Committee*

TAMUK contacts individuals who completed abstract submission after the original abstract deadline – notify whether the abstract is accepted, needs more information, or is denied			TAMUK/Host
TAMUK requests, receives and provides to 3 reviewers, updated abstracts from individuals who's abstracts required additional information			TAMUK/Host
Onsite Meeting			TAMUK/Host
Space Assessment/Room Assignment			TAMUK/Host
Review Field Sites			F/SV Comm.
Secure Offsite Facility/Menu/Entertainment			E/FB Comm.

3 weeks ahead-July, 2021

Target Date

Committee*

Confirmation Email to Speakers			KS Comm.
Final Communication to Registrants			A/P Comm.
Moderator/Chairperson Coordination meeting			A/P Comm.
Prepare Transportation Waivers			TAMUK/Host
Sign & Execute Transport Contract			TAMUK/Host
Print Evaluations/Surveys			TAMUK/Host
Print Signage			TAMUK/Host
Print PDH Certificates/or Online			W/C Comm.
Confirm Menu Count			E/FB Comm.
Confirm and Close Certification Classes			W/C Comm.

August 7, 2020 – ON SITE

DATE

Early Team/Committee Arrival		
Committee Pre Meeting		
Moderator Meeting		
Pre Event Committee Dinner		
Manage signage		
Daily review of meeting room set up		
Daily check on meals		

Virtual Conference (VC) Planning Schedule

6 months ahead	Target Date	Status	Committee*
Determine VC committee members			Organizing Committee
Determine software to be used – TAMUK BB Software available			
Determine who the breakout presenters will be			Agenda/VC Committee
Establish Tentative Virtual Program Schedule			Agenda/VC Committee
Establish VC committee meeting dates			VC Committee
Establish draft Road Map for VC			VC Committee
Confirm Virtual Exhibitors			VC Committee
Establish tech support room and members			VC Comm
Determine Registration Fee			VC Comm
Build script to be followed			VC Comm/Co-chairs
Develop Welcome graphic to be displayed while participants wait for a session			VC Comm
Determine virtual moderators for each session			VC Comm/Co-chairs
Determine practice run through schedule with co-chairs			VC Comm/Co-chairs
Confirm back up presentation processes			VC Comm/Co-chairs
Confirm all virtual session rooms, exhibitor rooms, tech room have been established, and communications checked			VC Comm
Confirm that all moderators and presenters are able to access Blackboard Collaborate			VC Comm
Confirm Blackboard Collaborate bandwidth for amount of registered participants			TAMUK
Finalize Road Map for VC			VC Comm
Practice run sessions with presenters			VC Comm
Practice run sessions with co-chairs			VC Comm
Provide VC tech support			TAMUK/Venue Host

COMMITTEE CATEGORIES ***ABBREVIATIONS**

Agenda/Program	A/P Comm.	5 ppl
Keynote Speakers (sub-comm)	KS Comm.	5 ppl
Exhibitors/Sponsorships	E/S Comm.	5 ppl
Field Trips/Site Visits	F/SV Comm.	5 ppl
Entertainment/F&B/AV support	E/FB Comm.	5 ppl
Workshops/Certifications planning	W/C Comm.	5 ppl

TAMUK/host city RESPONSIBILITIES

Venue Coordination		
Exhibitor Coordination		
Catering-on and offsite		
AV support		
Transportation – Field Trips		
Print program and signs		
Registration onsite		

ON GOING

Exhibitor Booth setup/planning/needs

Tech Support for Virtual Exhibitor Booths

Master sign up list (registrants, events, fieldtrip participants)

INITIAL STEP

Enter event in International Event Calendar

Complete Event Registration Form

Planning

Photographs/documentation

Entertainment

Print Needs

Planning/travel cost

Insurance

Service charges

Trans Waiver Forms

Office Space on site- Registration area/Conference Office

Optional-Communication/Education
Conference Program Communication/Message Board
Hotel Information Channel
City Maps
Storage On Site

OTHER STUFF

ALWAYS have a bad weather option

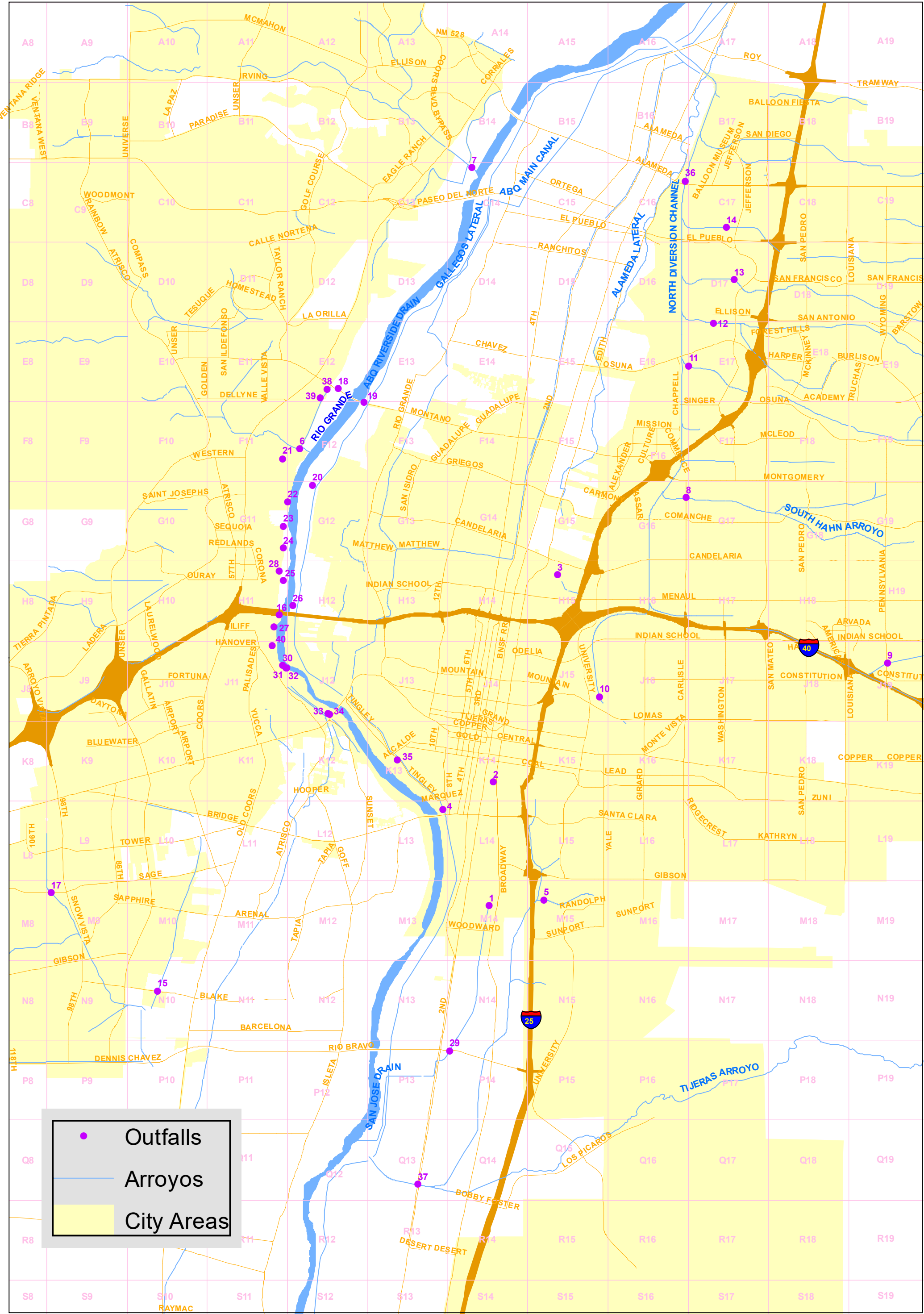


**Summary of AMAFCA's MS4
Dry Weather Discharge Screening Program
FY 2021 (July 1, 2020 - June 30, 2021)**

NPDES Permit No. NMR04A000
Part III.A.2 - Dry Weather Discharge Screening of MS4

Dry Weather Screening of Outfalls 2021

OUTFALL_NO	LOCATION	QUAD	GRID	PageNo
1	SAN JOSE DRAIN AT WOODWARD SE	SE	M-14	1
2	BROADWAY POND INFLOW CHANNEL	SE	K-14	2
3	MENAU POND INFLOW CHANNEL	NE	H-15	3
4	BARELAS PUMPING PLANT INFLOW	SW	L-13	4
5	KIRTLAND CHANNEL AT MULBERRY NE	SE	M-15	5
6	SAN ANTONIO ARROYO AT RIO GRANDE	NW	F-12	6
7	CALABACILLAS ARROYO AT RIO GRANDE	NW	C-14	7
8	HAHN ARROYO AT CARLISLE NE	NE	G-16	8
9	EMBUDO AT PENNSYLVANIA SOUTH OF MENDAL NE	NE	J-19	9
10	NDC AT TUCKER NE	NE	J-16	10
11	BEAR CANYON ARROYO AT NDC	NE	G-16	11
12	SOUTH PINO ARROYO AT WASHINGTON NE	NE	D-17	12
13	NORTH PINO ARROYO AT NDC	NE	D-17	13
14	SOUTH DOMINGO BACA ARROYO AT WASHINGTON NE	NE	C-17	14
15	AMOLE DEL NORTE CHANNEL AT BLAKE RD SW	SW	N-10	15
16	WEST BLUFF NW OUTFALL AT RIO GRANDE	NW	H-11	16
17	SNOW VISTA ARROYO AT DE VARGAS SW	SW	M-09	17
18	MONTANO EAST OF COORS NW	NW	E-12	18
19	MONTANO NW PS-47 WEST OF RIO GRANDE BLVD	NW	F-12	19
20	CANDELARIA NW PS-40 AT RIO GRANDE	NW	G-12	20
21	NAMASTE AND COORS NW	NW	F-11	21
22	SNOW GOOSE AT OXBOW BLUFF NW	NW	G-11	22
23	SEQUOIA NW AT RIO GRANDE	NW	G-11	23
24	REDLANDS - GRANDE VISTA NW	NW	G-12	24
25	PASEO DEL REY - OURAY - VISTA GRANDE NW	NW	H-11	25
26	DURANES NW PS AT RIO GRANDE	NW	H-12	26
27	CALLE DEL VISTA-ATRISCO NW	NW	H-11	27
28	WESTCLIFFE AND JOSEPHINE NW	NW	H-12	28
29	SAN JOSE DRAIN AT RIO BRAVO SW	SW	P-13	29
30	ATRISCO-ATRISCO PL-RIVERVIEW NW	NW	J-11	30
31	LABAJADA-ATRISCO-NORTH 30 IN PIPE	NW	J-11	31
32	LABAJADA-ATRISCO-SOUTH 36 IN PIPE	NW	J-11	32
33	CENTRAL-SUNSET-OSAGE PS-44 TWO PIPES 36 AND 42 IN	NW	J-12	33
34	CENTRAL-SUNSET-OSAGE NW PS-44-6 IN PIPE	NW	J-12	34
35	ALCALDE SW PS-41 AT RIO GRANDE	SW	K-13	35
36	NDC AT ALAMEDA NE	NE	C-17	36
37	TIJERAS ARROYO AT 2ND ST SW	SW	Q-12	37
38	MIRANDELA BY PUEBLO PARK SE OF COORS AND MONTANO NW	NW	E-12	38
39	BOSQUE SCHOOL AND MIRANDELA SE OF COORS AND MONTANO NW	NW	E-12	39
40	1406-1412 RIVERVIEW NW	NW	J-11	40



Dry Weather Screening of Outfalls-2021



LOCATION	SAN JOSE DRAIN AT BETHEL SE									
OUTFALL_NO	1	QUAD	SE	GRID	M-14	SAMPLED	<input type="checkbox"/>			
DATE_INSP	3/2/2021	TIME	11:44	Inspected by		MM, VV				
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	48		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



1

LOCATION	BROADWAY POND INFLOW CHANNEL										
OUTFALL_NO	2	QUAD	SE	GRID	K-14	SAMPLED	<input checked="" type="checkbox"/>				
DATE_INSP	2/3/2021	TIME	10:49	Inspected by		VV, MM					
WEATHER	CLOUDY	flow	Y	FLOW_GPM		1					
APPEARANCE	clear-no sheen	GROSS POLLUTANT		No odor, slight to mod particulates							
Source of Flow	cooling tower of lovelace medical center at 601 Dr MLKJ NE										
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ			Lab	Hall Environmental Analysis Lab						
AIR_TEMP_F	55	Lab_Report		2102219							
WATER_TEMP_F	43										
pH	8.35	E_coli_Coliform_mpn/100ml		325.5							
CONDUCTIVITY_Umos/cm	1200	Ammonia_mg/l		<1							
BOD_mg/l	<2	Nitrite_NO2_mg/l									
COD_mg/l	<20	Nitrate_NO3_mg/l									
TSS_mg/l	<4	Nitrite+Nitrate_mg/l		1.2							
TDS_mg/l	761	TKN_Tot_Kjeld_N_mg/l		1.1							
N-Hexane Extractable-(Oil_Grease)_mg/l	<9.5	Phosphorus_total_mg/l_P		0.4							



2

LOCATION	MENAU POND INFLOW CHANNEL									
OUTFALL_NO	3	QUAD	NE	GRID	H-15	SAMPLED	<input checked="" type="checkbox"/>			
DATE_INSP	1/12/2021	TIME	1:43 pm	Inspected by		MM,VV				
WEATHER	SUNNY	flow	YES	FLOW_GPM		20				
APPEARANCE	clear	GROSS POLLUTANT		No Odor, No Particulates						
Source of Flow	fire hydrant wash out and broken water line.									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ			Lab	Hall Environmental Analysis Lab					
AIR_TEMP_F	45	Lab_Report		2101437						
WATER_TEMP_F	42									
pH	8.22	E_coli_Coliform_mpn/100ml		1.0						
CONDUCTIVITY_Umos/cm	400	Ammonia_mg/l		<1.0						
BOD_mg/l	4.7	Nitrite_NO2_mg/l		<0.5						
COD_mg/l	<20.	Nitrate_NO3_mg/l		<0.5						
TSS_mg/l	<4.0	Nitrite+Nitrate_mg/l								
TDS_mg/l	271	TKN_Tot_Kjeld_N_mg/l		<1.0						
N-Hexane Extractable-(Oil_Grease)_mg/l	<9.5	Phosphorus_total_mg/l_P		0.05						



3

LOCATION	BARELAS PUMPING PLANT INFLOW									
OUTFALL_NO	4	QUAD	SW	GRID	L-13	SAMPLED	<input checked="" type="checkbox"/>			
DATE_INSP	2/3/2021	TIME	2:00	Inspected by		VV, MM				
WEATHER	CLOUDY	flow	YES	FLOW_GPM		10				
APPEARANCE	cloudy,slight sheen		GROSS POLLUTANT		slight musty odor, sight to mod particulates					
Source of Flow	Groundwater infiltration and irrigation water waste									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab	Hall Environmental Analysis Lab				
AIR_TEMP_F	63		Lab_Report		2102219					
WATER_TEMP_F	53									
pH	8.39		E_coli_Coliform_mpn/100ml		1732.9					
CONDUCTIVITY_Umos/cm	850		Ammonia_mg/l		<1					
BOD_mg/l	<2		Nitrite_NO2_mg/l							
COD_mg/l	<20		Nitrate_NO3_mg/l							
TSS_mg/l	<4		Nitrite+Nitrate_mg/l		<1					
TDS_mg/l	550		TKN_Tot_Kjeld_N_mg/l		<1					
N-Hexane Extractable-(Oil_Grease)_mg/l	<9.4		Phosphorus_total_mg/l_P		0.15					



4

LOCATION	KIRTLAND CHANNEL AT MULBERRY NE									
OUTFALL_NO	5	QUAD	SE	GRID	M-15	SAMPLED	<input type="checkbox"/>			
DATE_INSP	3/2/2021	TIME	11:56	Inspected by		MM, VV				
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	48		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



5

LOCATION	SAN ANTONIO ARROYO AT RIO GRANDE									
OUTFALL_NO	6	QUAD	NW	GRID	F-12	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/13/2021	TIME	10:30	Inspected by		MM, VV				
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	45		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



6

LOCATION	CALABACILLAS ARROYO AT RIO GRANDE									
OUTFALL_NO	7	QUAD	NW	GRID	C-14	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/12/2021	TIME	9:15	Inspected by		MM, VV				
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT							
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	24		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



7

LOCATION	HAHN ARROYO AT CARLISLE NE									
OUTFALL_NO	8	QUAD	NE	GRID	G-16	SAMPLED	<input checked="" type="checkbox"/>			
DATE_INSP	3/2/2021	TIME	9:55	Inspected by		VV, MM				
WEATHER	SUNNY	flow	YES FLOW	FLOW_GPM		1				
APPEARANCE	Slight yellow, No Sheen		GROSS POLLUTANT		No Odor, Slight particulates					
Source of Flow	well wash water from Volandia2 wells									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab	Hall Environmental Analysis Lab				
AIR_TEMP_F	39	Lab_Report		2103135						
WATER_TEMP_F	51									
pH	8.40	E_coli_Coliform_mpn/100ml		3.1						
CONDUCTIVITY_Umos/cm	870	Ammonia_mg/l		<0.1						
BOD_mg/l	4.6	Nitrite_NO2_mg/l		<0.5						
COD_mg/l	35	Nitrate_NO3_mg/l		<0.5						
TSS_mg/l	15	Nitrite+Nitrate_mg/l								
TDS_mg/l	484	TKN_Tot_Kjeld_N_mg/l		4.2						
N-Hexane Extractable-(Oil_Grease)_mg/l	<9.4	Phosphorus_total_mg/l_P		0.06						



LOCATION	EMBUDO AT PENNSYLVANIA SOUTH OF MANUAL NE									
OUTFALL_NO	9	QUAD	NE	GRID	J-19	SAMPLED	<input type="checkbox"/>			
DATE_INSP	3/2/2021	TIME	8:29	Inspected by		MM, VV				
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	32		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



LOCATION	NDC AT TUCKER									
OUTFALL_NO	10	QUAD	NE	GRID	J-16	SAMPLED	<input type="checkbox"/>			
DATE_INSP	3/2/2021	TIME	10:53	Inspected by						
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na	GROSS POLLUTANT		na						
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	44	Lab_Report								
WATER_TEMP_F										
pH		E_coli_Coliform_mpn/100ml								
CONDUCTIVITY_Umos/cm		Ammonia_mg/l								
BOD_mg/l		Nitrite_NO2_mg/l								
COD_mg/l		Nitrate_NO3_mg/l								
TSS_mg/l		Nitrite+Nitrate_mg/l								
TDS_mg/l		TKN_Tot_Kjeld_N_mg/l								
N-Hexane Extractable-(Oil_Grease)_mg/l		Phosphorus_total_mg/l_P								



10

LOCATION	BEAR CANYON ARROYO AT NDC									
OUTFALL_NO	11	QUAD	NE	GRID	G-16	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/12/2021	TIME	11:30	Inspected by		MM,VV				
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	37		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



11

LOCATION	SOUTH PINO ARROYO AT WASHINGTON NE									
OUTFALL_NO	12	QUAD	NE	GRID	D-17	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/12/2021	TIME	11:20	Inspected by			MM, VV			
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM			0			
APPEARANCE	na	GROSS POLLUTANT			na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	37	Lab_Report								
WATER_TEMP_F										
pH		E_coli_Coliform_mpn/100ml								
CONDUCTIVITY_Umos/cm		Ammonia_mg/l								
BOD_mg/l		Nitrite_NO2_mg/l								
COD_mg/l		Nitrate_NO3_mg/l								
TSS_mg/l		Nitrite+Nitrate_mg/l								
TDS_mg/l		TKN_Tot_Kjeld_N_mg/l								
N-Hexane Extractable-(Oil_Grease)_mg/l		Phosphorus_total_mg/l_P								



12

LOCATION	NORTH PINO ARROYO AT TIBURON NE									
OUTFALL_NO	13	QUAD	NE	GRID	D-17	SAMPLED	<input type="checkbox"/>			
DATE_INSP	3/2/2021	TIME	12:24	Inspected by		MM, VV				
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	50		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



13

LOCATION	SOUTH DOMINGO BACA ARROYO AT WASHINGTON NE									
OUTFALL_NO	14	QUAD	NE	GRID	C-17	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/12/2021	TIME	10:00	Inspected by			MM, VV			
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM			0			
APPEARANCE	na	GROSS POLLUTANT								
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	32	Lab_Report								
WATER_TEMP_F										
pH		E_coli_Coliform_mpn/100ml								
CONDUCTIVITY_Umos/cm		Ammonia_mg/l								
BOD_mg/l		Nitrite_NO2_mg/l								
COD_mg/l		Nitrate_NO3_mg/l								
TSS_mg/l		Nitrite+Nitrate_mg/l								
TDS_mg/l		TKN_Tot_Kjeld_N_mg/l								
N-Hexane Extractable-(Oil_Grease)_mg/l		Phosphorus_total_mg/l_P								



LOCATION	AMOLE DEL NORTE CHANNEL AT BLAKE SW									
OUTFALL_NO	15	QUAD	SW	GRID	N-10	SAMPLED	<input checked="" type="checkbox"/>			
DATE_INSP	3/4/2021	TIME	11:30	Inspected by		VV, MM				
WEATHER	SUNNY	flow	YES	FLOW_GPM		0.5				
APPEARANCE	very cloudy, No sheen		GROSS POLLUTANT		No odor, mod particulates, Slight yellow to tan colo					
Source of Flow	irrigation water escape									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab	Hall Environmental Analysis Lab				
AIR_TEMP_F	52		Lab_Report		2103222					
WATER_TEMP_F	47									
pH	8.06		E_coli_Coliform_mpn/100ml		<1					
CONDUCTIVITY_Umos/cm	550		Ammonia_mg/l		<1					
BOD_mg/l	3.9		Nitrite_NO2_mg/l		<0.5					
COD_mg/l	<40		Nitrate_NO3_mg/l		<0.5					
TSS_mg/l	32		Nitrite+Nitrate_mg/l							
TDS_mg/l	373		TKN_Tot_Kjeld_N_mg/l		1.5					
N-Hexane Extractable-(Oil_Grease)_mg/l	<9.4		Phosphorus_total_mg/l_P		0.21					



15

LOCATION	WEST BLUFF NW OUTFALL AT RIO GRANDE									
OUTFALL_NO	16	QUAD	NW	GRID	H-11	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/25/2021	TIME	11:40	Inspected by		MM, VV				
WEATHER	CLOUDY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	38		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



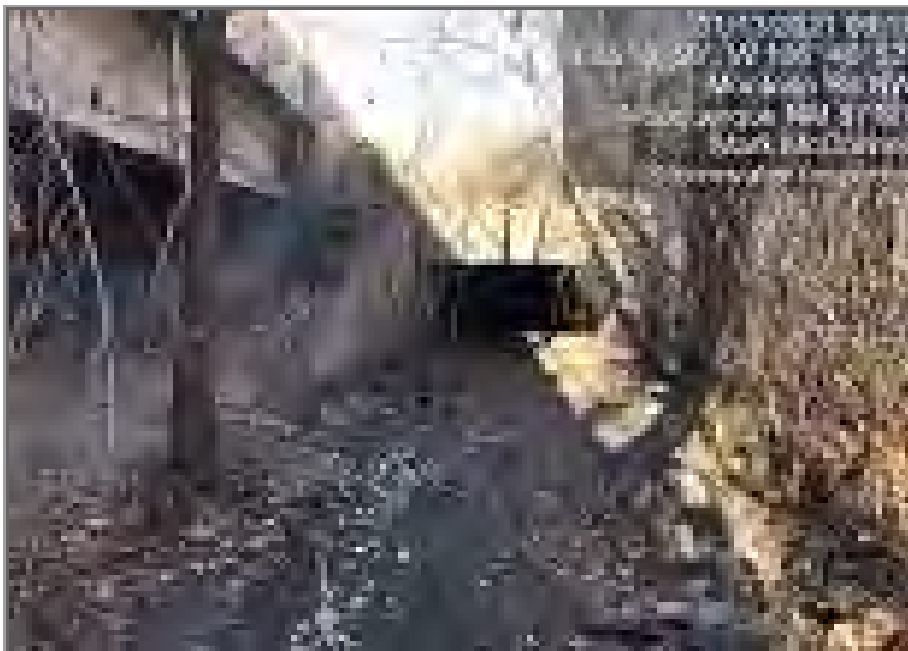
16

LOCATION	SNOW VISTA ARROYO AT DE VARGAS SW									
OUTFALL_NO	17	QUAD	SW	GRID	M-09	SAMPLED	<input type="checkbox"/>			
DATE_INSP	3/3/2021	TIME	11:12	Inspected by		VV, MM				
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	52		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



17

LOCATION	MONTANO EAST OF COORS NW									
OUTFALL_NO	18	QUAD	NW	GRID	E-12	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/13/2021	TIME	9:20	Inspected by		MM, VV				
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	36		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



18

LOCATION	MONTANO NW PS-47 WEST OF RIO GRANDE BLVD									
OUTFALL_NO	19	QUAD	NW	GRID	F-12	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/13/2021	TIME	9:40	Inspected by			MM, VV			
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM			0			
APPEARANCE	na	GROSS POLLUTANT			na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	39	Lab_Report								
WATER_TEMP_F										
pH		E_coli_Coliform_mpn/100ml								
CONDUCTIVITY_Umos/cm		Ammonia_mg/l								
BOD_mg/l		Nitrite_NO2_mg/l								
COD_mg/l		Nitrate_NO3_mg/l								
TSS_mg/l		Nitrite+Nitrate_mg/l								
TDS_mg/l		TKN_Tot_Kjeld_N_mg/l								
N-Hexane Extractable-(Oil_Grease)_mg/l		Phosphorus_total_mg/l_P								



19

LOCATION	CANDELARIA NW PS-40 AT RIO GRANDE									
OUTFALL_NO	20	QUAD	NW	GRID	G-12	SAMPLED	<input type="checkbox"/>			
DATE_INSP	2/3/2021	TIME	8:52	Inspected by			MM, VV			
WEATHER	CLOUDY	flow	NO FLOW	FLOW_GPM			0			
APPEARANCE	na	GROSS POLLUTANT			na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	49	Lab_Report								
WATER_TEMP_F										
pH		E_coli_Coliform_mpn/100ml								
CONDUCTIVITY_Umos/cm		Ammonia_mg/l								
BOD_mg/l		Nitrite_NO2_mg/l								
COD_mg/l		Nitrate_NO3_mg/l								
TSS_mg/l		Nitrite+Nitrate_mg/l								
TDS_mg/l		TKN_Tot_Kjeld_N_mg/l								
N-Hexane Extractable-(Oil_Grease)_mg/l		Phosphorus_total_mg/l_P								



20

LOCATION	NAMASTE AND COORS NW									
OUTFALL_NO	21	QUAD	NW	GRID	F-11	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/13/2021	TIME	10:50	Inspected by		MM, VV				
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	47		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



21

LOCATION	SNOW GOOSE AT OXBOW BLUFF NW										
OUTFALL_NO	22	QUAD	NW	GRID	G-11	SAMPLED	<input type="checkbox"/>				
DATE_INSP	1/20/2021	TIME	9:15	Inspected by		VV, MM					
WEATHER	CLOUDY	flow	NO FLOW	FLOW_GPM		0					
APPEARANCE	na	GROSS POLLUTANT		na							
Source of Flow	na										
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab						
AIR_TEMP_F	32	Lab_Report									
WATER_TEMP_F											
pH		E_coli_Coliform_mpn/100ml									
CONDUCTIVITY_Umos/cm		Ammonia_mg/l									
BOD_mg/l		Nitrite_NO2_mg/l									
COD_mg/l		Nitrate_NO3_mg/l									
TSS_mg/l		Nitrite+Nitrate_mg/l									
TDS_mg/l		TKN_Tot_Kjeld_N_mg/l									
N-Hexane Extractable-(Oil_Grease)_mg/l		Phosphorus_total_mg/l_P									



22

LOCATION	SEQUOIA NW AT RIO GRANDE									
OUTFALL_NO	23	QUAD	NW	GRID	G-11	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/13/2021	TIME	11:30	Inspected by			MM, VV			
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM			0			
APPEARANCE	na	GROSS POLLUTANT			na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	49	Lab_Report								
WATER_TEMP_F										
pH		E_coli_Coliform_mpn/100ml								
CONDUCTIVITY_Umos/cm		Ammonia_mg/l								
BOD_mg/l		Nitrite_NO2_mg/l								
COD_mg/l		Nitrate_NO3_mg/l								
TSS_mg/l		Nitrite+Nitrate_mg/l								
TDS_mg/l		TKN_Tot_Kjeld_N_mg/l								
N-Hexane Extractable-(Oil_Grease)_mg/l		Phosphorus_total_mg/l_P								



23

LOCATION	REDLANDS - GRANDE VISTA NW									
OUTFALL_NO	24	QUAD	NW	GRID	G-12	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/13/2021	TIME	11:40	Inspected by			MM, VV			
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM			0			
APPEARANCE	na	GROSS POLLUTANT			na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	49	Lab_Report								
WATER_TEMP_F										
pH		E_coli_Coliform_mpn/100ml								
CONDUCTIVITY_Umos/cm		Ammonia_mg/l								
BOD_mg/l		Nitrite_NO2_mg/l								
COD_mg/l		Nitrate_NO3_mg/l								
TSS_mg/l		Nitrite+Nitrate_mg/l								
TDS_mg/l		TKN_Tot_Kjeld_N_mg/l								
N-Hexane Extractable-(Oil_Grease)_mg/l		Phosphorus_total_mg/l_P								



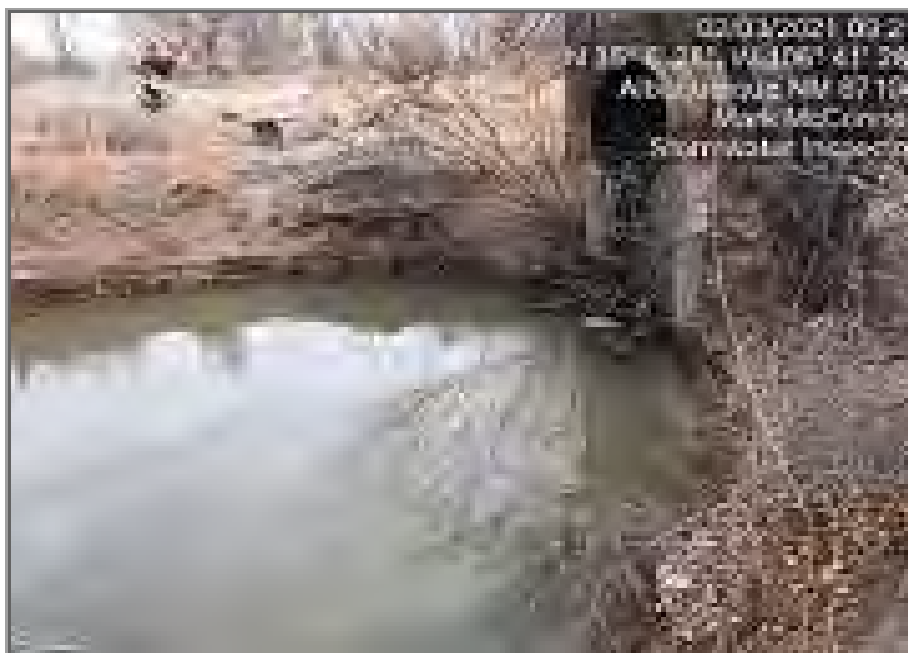
24

LOCATION	PASEO DEL REY - OURAY - VISTA GRANDE NW									
OUTFALL_NO	25	QUAD	NW	GRID	H-11	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/25/2021	TIME	10:40	Inspected by		VV, MM				
WEATHER	CLOUDY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	38		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



25

LOCATION	DURANES NW PS AT RIO GRANDE									
OUTFALL_NO	26	QUAD	NW	GRID	H-12	SAMPLED	<input checked="" type="checkbox"/>			
DATE_INSP	2/3/2021	TIME	9:20	Inspected by		MM, VV				
WEATHER	CLOUDY	flow	YES	FLOW_GPM		5				
APPEARANCE	clear, no sheen		GROSS POLLUTANT		No Odor, No Particulates					
Source of Flow	well wash out from Durance 4 & 6 wells and groundwater infiltration									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ			Lab	Hall Environmental Analysis Lab					
AIR_TEMP_F	50		Lab_Report		2102219					
WATER_TEMP_F	46									
pH	7.74		E_coli_Coliform_mpn/100ml		59.1					
CONDUCTIVITY_Umos/cm	570		Ammonia_mg/l		<1					
BOD_mg/l	<2		Nitrite_NO2_mg/l							
COD_mg/l	<20		Nitrate_NO3_mg/l							
TSS_mg/l	<4		Nitrite+Nitrate_mg/l		<1					
TDS_mg/l	349		TKN_Tot_Kjeld_N_mg/l		<1					
N-Hexane Extractable-(Oil_Grease)_mg/l	<9.3		Phosphorus_total_mg/l_P		0.07					



26

LOCATION	CALLE DEL VISTA-ATRISCO NW									
OUTFALL_NO	27	QUAD	NW	GRID	H-11	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/29/2021	TIME	8:50	Inspected by			VV, MM			
WEATHER	CLOUDY	flow	NO FLOW	FLOW_GPM			0			
APPEARANCE	na	GROSS POLLUTANT			na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	31	Lab_Report								
WATER_TEMP_F										
pH		E_coli_Coliform_mpn/100ml								
CONDUCTIVITY_Umos/cm		Ammonia_mg/l								
BOD_mg/l		Nitrite_NO2_mg/l								
COD_mg/l		Nitrate_NO3_mg/l								
TSS_mg/l		Nitrite+Nitrate_mg/l								
TDS_mg/l		TKN_Tot_Kjeld_N_mg/l								
N-Hexane Extractable-(Oil_Grease)_mg/l		Phosphorus_total_mg/l_P								



27

LOCATION	WESTCLIFFE AND JOSEPHINE NW									
OUTFALL_NO	28	QUAD	NW	GRID	H-12	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/25/2021	TIME	10:30	Inspected by		MM, VV				
WEATHER	CLOUDY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	38		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



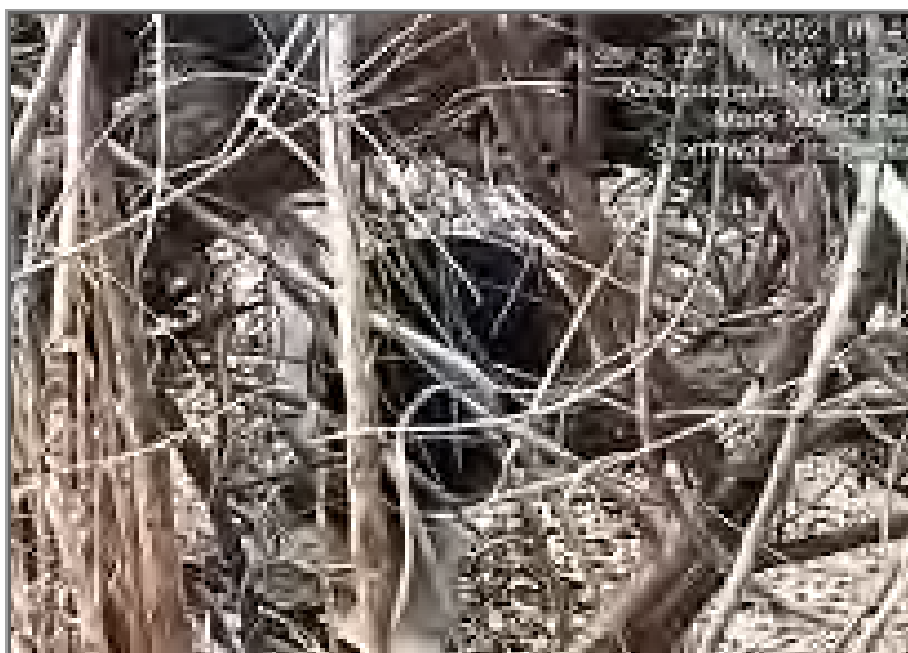
28

LOCATION	SAN JOSE DRAIN AT RIO BRAVO SW									
OUTFALL_NO	29	QUAD	SW	GRID	P-13	SAMPLED	<input type="checkbox"/>			
DATE_INSP	3/2/2021	TIME	11:30	Inspected by			MM,VV			
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM			0			
APPEARANCE	na	GROSS POLLUTANT			na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	48	Lab_Report								
WATER_TEMP_F										
pH		E_coli_Coliform_mpn/100ml								
CONDUCTIVITY_Umos/cm		Ammonia_mg/l								
BOD_mg/l		Nitrite_NO2_mg/l								
COD_mg/l		Nitrate_NO3_mg/l								
TSS_mg/l		Nitrite+Nitrate_mg/l								
TDS_mg/l		TKN_Tot_Kjeld_N_mg/l								
N-Hexane Extractable-(Oil_Grease)_mg/l		Phosphorus_total_mg/l_P								



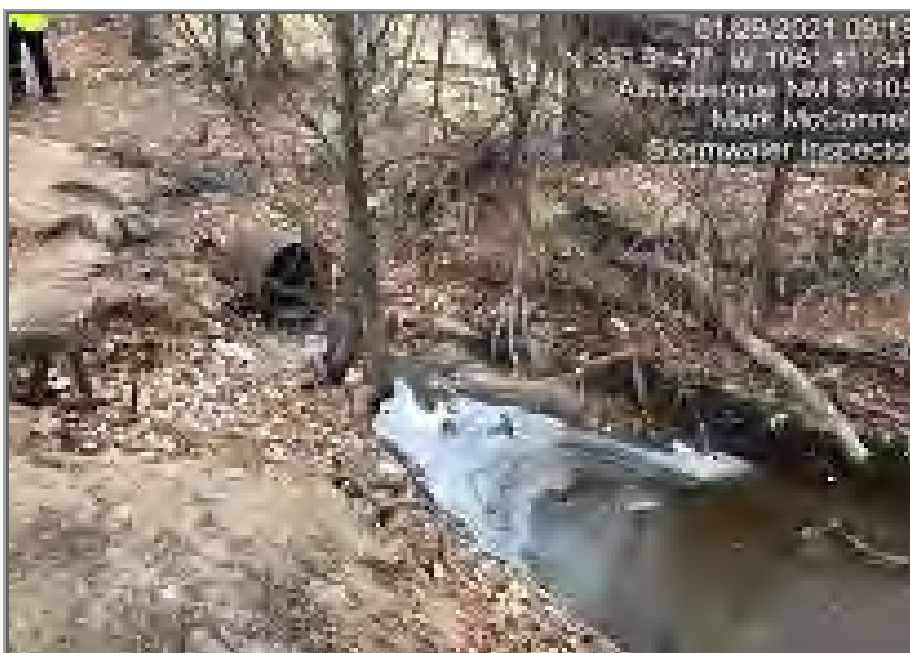
29

LOCATION	ATRISCO-ATRISCO PL-RIVERVIEW NW									
OUTFALL_NO	30	QUAD	NW	GRID	J-11	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/29/2021	TIME	9:37	Inspected by		VV, MM				
WEATHER	CLOUDY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	34		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



30

LOCATION	LABAJADA-ATRISCO-NORTH 30 IN PIPE									
OUTFALL_NO	31	QUAD	NW	GRID	J-11	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/29/2021	TIME	9:18	Inspected by		VV, MM				
WEATHER	CLOUDY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE			GROSS POLLUTANT							
Source of Flow										
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	33	Lab_Report								
WATER_TEMP_F										
pH		E_coli_Coliform_mpn/100ml								
CONDUCTIVITY_Umos/cm		Ammonia_mg/l								
BOD_mg/l		Nitrite_NO2_mg/l								
COD_mg/l		Nitrate_NO3_mg/l								
TSS_mg/l		Nitrite+Nitrate_mg/l								
TDS_mg/l		TKN_Tot_Kjeld_N_mg/l								
N-Hexane Extractable-(Oil_Grease)_mg/l		Phosphorus_total_mg/l_P								



31

LOCATION	LABAJADA-ATRISCO-SOUTH 36 IN PIPE									
OUTFALL_NO	32	QUAD	NW	GRID	J-11	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/29/2021	TIME	9:18	Inspected by		VV, MM				
WEATHER	CLOUDY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	33		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



32

LOCATION	CENTRAL-SUNSET-OSAGE PS-44 TWO PIPES 36 AND 42 IN									
OUTFALL_NO	33	QUAD	NW	GRID	J-12	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/29/2021	TIME	10:04	Inspected by		VV, MM				
WEATHER	CLOUDY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	34		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



33

LOCATION	CENTRAL-SUNSET-OSAGE NW PS-44-6 IN PIPE									
OUTFALL_NO	34	QUAD	NW	GRID	J-12	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/29/2021	TIME	10:14	Inspected by			VV, MM			
WEATHER	CLOUDY	flow	NO FLOW	FLOW_GPM			0			
APPEARANCE	na	GROSS POLLUTANT								
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	34	Lab_Report								
WATER_TEMP_F										
pH		E_coli_Coliform_mpn/100ml								
CONDUCTIVITY_Umos/cm		Ammonia_mg/l								
BOD_mg/l		Nitrite_NO2_mg/l								
COD_mg/l		Nitrate_NO3_mg/l								
TSS_mg/l		Nitrite+Nitrate_mg/l								
TDS_mg/l		TKN_Tot_Kjeld_N_mg/l								
N-Hexane Extractable-(Oil_Grease)_mg/l		Phosphorus_total_mg/l_P								



34

LOCATION	ALCALDE SW PS-41 AT RIO GRANDE									
OUTFALL_NO	35	QUAD	SW	GRID	K-13	SAMPLED	<input type="checkbox"/>			
DATE_INSP	1/29/2021	TIME	10:51	Inspected by		VV, MM				
WEATHER	CLOUDY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	37		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



35

LOCATION	NDC AT ALAMEDA NE									
OUTFALL_NO	36	QUAD	NE	GRID	C-17	SAMPLED	<input checked="" type="checkbox"/>			
DATE_INSP	3/9/2021	TIME	9:17	Inspected by		VV, MM				
WEATHER	SUNNY	flow	YES	FLOW_GPM		20				
APPEARANCE	slightly cloudy		GROSS POLLUTANT		No Odor, No Sheen, Heavy Particulates					
Source of Flow	well wash out, irrigation scape water and broken pipe lines.									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab	Hall Environmental Analysis Lab				
AIR_TEMP_F	39		Lab_Report		2103222					
WATER_TEMP_F	34									
pH	8.36		E_coli_Coliform_mpn/100ml		7.5					
CONDUCTIVITY_Umos/cm	600		Ammonia_mg/l		<1					
BOD_mg/l	2.8		Nitrite_NO2_mg/l		<0.5					
COD_mg/l	24.2		Nitrate_NO3_mg/l		<0.5					
TSS_mg/l	6		Nitrite+Nitrate_mg/l							
TDS_mg/l	362		TKN_Tot_Kjeld_N_mg/l		<1					
N-Hexane Extractable-(Oil_Grease)_mg/l	<9.4		Phosphorus_total_mg/l_P		0.03					



36

LOCATION	TIJERAS ARROYO AT 2ND ST SW									
OUTFALL_NO	37	QUAD	SW	GRID	Q-12	SAMPLED	<input type="checkbox"/>			
DATE_INSP	3/2/2021	TIME	11:20	Inspected by		MM				
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	48		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



37

LOCATION		MIRANDELA BY PUEBLO PARK SE OF COORS AND MONTANO NW					
OUTFALL_NO	38	QUAD	NW	GRID	E12	SAMPLED	<input type="checkbox"/>
DATE_INSP	1/13/2021	TIME	9:00	Inspected by		MM, VV	
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM		0	
APPEARANCE	na	GROSS POLLUTANT		na			
Source of Flow	na						
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ			Lab			
AIR_TEMP_F	34	Lab_Report					
WATER_TEMP_F							
pH		E_coli_Coliform_mpn/100ml					
CONDUCTIVITY_Umos/cm		Ammonia_mg/l					
BOD_mg/l		Nitrite_NO2_mg/l					
COD_mg/l		Nitrate_NO3_mg/l					
TSS_mg/l		Nitrite+Nitrate_mg/l					
TDS_mg/l		TKN_Tot_Kjeld_N_mg/l					
N-Hexane Extractable-(Oil_Grease)_mg/l		Phosphorus_total_mg/l_P					



38

LOCATION **BOSQUE SCHOOL AND MIRANDELA SE OF COORS AND MONTANO NW**

OUTFALL_NO **39** QUAD **NW** GRID **E12** SAMPLED ☐

DATE_INSP **1/13/2021** TIME **9:00** Inspected by **MM, VV**

WEATHER **SUNNY** flow **NO** FLOW_GPM **0**

APPEARANCE **na** GROSS POLLUTANT **na**

Source of Flow **na**

link <X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ> Lab

AIR_TEMP_F **34** Lab_Report

WATER_TEMP_F

pH E_coli_Coliform_mpn/100ml

CONDUCTIVITY_Umos/cm Ammonia_mg/l

BOD_mg/l Nitrite_NO2_mg/l

COD_mg/l Nitrate_NO3_mg/l

TSS_mg/l Nitrite+Nitrate_mg/l

TDS_mg/l TKN_Tot_Kjeld_N_mg/l

N-Hexane Extractable-(Oil_Grease)_mg/l Phosphorus_total_mg/l_P



39

LOCATION	1406-1412 RIVERVIEW NW									
OUTFALL_NO	40	QUAD	NW	GRID	j11	SAMPLED	<input type="checkbox"/>			
DATE_INSP	3/3/2021	TIME	2:08	Inspected by		MM, VV				
WEATHER	SUNNY	flow	NO FLOW	FLOW_GPM		0				
APPEARANCE	na		GROSS POLLUTANT		na					
Source of Flow	na									
link	X:\MD\SHARE\MD-Storm\7 NPDES\311 SWQ				Lab					
AIR_TEMP_F	64		Lab_Report							
WATER_TEMP_F										
pH			E_coli_Coliform_mpn/100ml							
CONDUCTIVITY_Umos/cm			Ammonia_mg/l							
BOD_mg/l			Nitrite_NO2_mg/l							
COD_mg/l			Nitrate_NO3_mg/l							
TSS_mg/l			Nitrite+Nitrate_mg/l							
TDS_mg/l			TKN_Tot_Kjeld_N_mg/l							
N-Hexane Extractable-(Oil_Grease)_mg/l			Phosphorus_total_mg/l_P							



40